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The Cloisters, Canterbury Cathedral.—From Drawings by Mr. F. Wilkinson .... *Single-Page Photo-Litho.*
House, "Crooksbury," Farnham.—Mr. Edwin Lutyens, Architect........ *Single-Page Photo-Litho.*
Borwick Hall, Lancashire.—Drawn by Mr. Edgar Hartley .... *Single-Page Photo-Litho.*
Baths, St. George's-in-the-East.—Mr. Keith D. Young, Architect .... *Single-Page Ink-Photo.*
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The Architectural Exhibition, Turin.—II.

THE important competition for the new Houses of Parliament at Rome is well represented in the exhibition by a collection of several of the designs submitted. In addition to the designs by Moretti and by Broggi and Sommaruga, illustrated in the *Builder* of September 13 last, several others are worthy of notice. That by Enrico Ristori, which received one of the premiums of 5,000 francs, is shown in a set of drawings of which the elevations are delicately drawn in pencil fixed with a light wash of colour, the windows being marked by a flat tint. The drawings thus look somewhat faint for competition purposes, but the general effect is most refined, and the character of the design accords with the refinement of the drawings. The central feature of the design both in plan and elevation is a large dome of pleasing form, which however does not, as in some of the designs, overpower the remainder of the building, but is well proportioned to the whole mass. The proportions, indeed, throughout this design are excellent, and stamp it as the work of a thoroughly skilful artist. The scheme of the elevations is well conceived, a rusticated order with pilasters on the ground-floor is supported by an astylar rusticated basement, and carries a great Corinthian order which embraces the first-floor and a mezzanine; above is a blank attic with figures in front. The centre and angle pavilions have coupled columns, the remainder of the façade single shafts. The whole design is quiet, dignified, refined, and eminently artistic. The drawings illustrating the design of Signori Enrico Deserti & Co., hanging in close proximity to that just described, are as great a contrast as could well be imagined. Apparently reproductions by the ferro-prussiate, or some similar process, and printed in purplish colour, the drawings are decidedly unattractive. Nor is the design one whit more pleasing; the façades, consisting of a long range of pilasters of a single order, running through two stories, with a commonplace pediment and portico in the centre. A blank attic, with figures at intervals over the pilasters, runs the length of the façade and at each angle forms the base to a quadriga. A heavily-designed dome of truncated, pointed form, with a square cupola over it, terminated by a horizontal line, forms the crowning unpleasantness to a most unpleasing design.

Next in order comes the design of Broggi and Sommaruga, which is shown in cleverly-shaded Indian-ink drawings, and, in addition to those illustrated in our pages, a large detailed drawing, to a scale of $\frac{1}{20}$, shows the ornamentation of the interior of the centre hall. This drawing is strongly coloured, and evidently the handiwork of Sommaruga.

The design by Vittorio Evenes is one of the less satisfactory of those exhibited, and suggests a theatre rather than the home of legislation,—an effect mainly produced by the adoption, for the chief features of the principal façade, of three large arches over triple openings divided by detached columns. The drawings are an example of the method of execution in ink line, bold and rough in draughtsmanship, with paler ink used occasionally to give an idea of difference of plane. Both drawing and design agree together in leading to an impression of something approaching vulgarity of effect. A rusticated basement carries an order which extends wholly round the building, and comprises the ground-floor and mezzanine over. Above this is a second order, containing no visible floor, and whose purpose is merely to contain the great arches already mentioned and a medley of features which enhance the tendency to vulgarity noticeable in the design. The side elevations are somewhat more pleasing, being restricted to the single order and rustic basement. This design is evidence of the difficulty felt by many of the competitors in giving the necessary dignity to a building which in its main features is virtually of one story only. We need scarcely add that in this case the difficulty has not been successfully met. The design by Vittorio Moschini is apparently an attempt,—and that not a happy one,—to outvie the entirely successful design of Baron von Hansen in the Houses of Parliament at Vienna. The author has evidently a sincere admiration for the form of hexastyle peripteral temples, and the design consists of a large collection of these, no less than seven being visible from one point of view, as shown in the perspective, connected by colonnades of the Corinthian order, or by astylar walls with simple rectangular openings for windows, surmounted by a carved frieze of considerable height, the whole standing on an astylar rusticated basement, with simple openings. The elevations are drawn in ink, and tinted in greys more or less greenish in hue, the shading being in cold grey, with the windows partly coloured of similar tint. The detail is coloured to represent marble and granite.

Moretti's design, which we have illustrated, is shown in some well-executed ink-drawings, tinted in cold sepia and grey. The detail drawings are in sepia, with the bronze sculpture in a dark grey tint. The next set of drawings is by Professor Giovanni Ugolini, and, by their proximity to those of Moretti, the difference between the older and younger generations of modern Italian architects is emphatically defined. Professor Ugolini's design we can but characterise as extremely feeble, lacking in sense of proportion and in coherence of idea. The feature of the great arch is once more in evidence, and serves but to suggest a railway station instead of giving the dignity to the design that the author probably intended. The next design we come to, that by Guiseppe Brunetta, is an example of what may be found in most open competitions, the "vaulting ambition that o'erleaps itself and falls on t'other side," the work of one who has yet to learn to walk before he can run in architectural design; the drawings, too, are unfinished, and suggest the "after office hours" style of preparation.

The design by Professor Calderini is cold correct, and commonplace, drawn in pencil and back lined, the windows left white. A great order on a rusticated ground story embraces the first floor and mezzanine; the windows have for their dressing the Roman Renaissance order treatment with pediments triangular and segmental alternately, and the whole design is tame and uninteresting. A nicely-executed set of drawings in ink, shaded in Indian ink and grey, illustrates the design of Signor Giampietri, which was one of those that obtained honourable mention and a premium of 3,000 francs. The chief façade is composed of three well-designed pavilions, connected by colonnades standing on a rusticated basement and extending as wings beyond the outer pavilions. Behind the colonnade are two stories of windows, and above it a blank attic.

Over the central pavilion is a well-proportioned dome, the cupola of which, however, is a complete sphere supported by a circular colonade, and apparently resting upon the point of an obtuse conical roof, a feature that is, perhaps, rather a *tour de force* than legitimate design. Besides those we have described there are some three or four others exhibited from this competition out of the forty-nine designs sent in, and, assuming that the drawings in the Exhibition are a fair sample of the whole, as they certainly appear to be, since designs of superior, mediocre, and inferior quality are all impartially shown, we can with confidence express our opinion that the award of the premiums has been just and equitable; the best designs, although by younger men, take the highest place, while the prestige and position of the professors does not enable their inferiority of design to oust their more artistic rivals from the premier positions.

Some few designs submitted in the competition for the Courts of Justice at Rome, as far back as 1886, are hung in the Exhibition, and serve rather to show the advance that is being made in modern architecture. Besides the design by Professor Calderini, noticed in our last issue, that by Camillo Pistrucci, of Rome, may be instanced. This is of very classic character, and has a ground-floor with simple rectangular windows, with architrave around, surmounted by a cornice carried by consoles. This storey is astylar and forms the basement for a colonnade of the Ionic order, enclosing commonplace pedimented windows on the first-floor and a mezzanine over of very feeble design. The central pavilion has the favourite feature of a great arch and under it a projecting tetrastyle Ionic portico. This design, which is of commonplace character, does not convey to us a very exalted idea of the abilities of modern Italian architects, although submitted for the second competition. The design by L. Caselli, of Carrara, also does not rise above the commonplace, suggesting rather a simple wall pierced with holes and decorated with applied orders, each comprising a story and mezzanine.

Another important competition which has been recently decided, the drawings having been sent in on March 31 last, is that for the proposed new Jewish Synagogue at Rome, with college and school adjoining. The plan is in almost all cases identical in its main features, a large central square open space of considerable height, covered with some form of dome; around this on three sides aisles with galleries in two tiers over, and on the fourth side the rostrum, and behind it the tabernacle or Holy of Holies. The galleries are reached by staircases enclosed in turrets at the front angles. The drawings are executed to the scale of $\frac{1}{50}$ with details to $\frac{1}{10}$. The style adopted is almost universally some version of Mohammedan architecture, more or less freely treated. The first premiated design, by Attilio Muggia, of Bologna, well merits its position, and is shown in an excellently-prepared set of drawings, drawn in ink and tinted, the elevations being coloured a light greenish yellow with greenish-grey bands; the interior shown in the sections is tinted in a light greenish-grey, with deep shadows in warm sepia, the sections of walls being blocked in with madder brown. The iron construction is carefully shown, and clever and original in design. The detail drawings show an elaborate scheme of colour-decoration in keeping with the Granada Moorish style adopted. The central dome is well raised, of rather steep pitch, and surmounted by a pointed cupola and lantern. In close proximity to these designs are other drawings by the same architect, for a chalet restaurant in Swiss style, and a design for some flats, the façade of which is indeed very flat, and hardly gives promise of the excellent design for the synagogue. Signor Muggia also exhibits a student design for a theatre, based very palpably on the published illustrations of the Vienna Opera House, both in plan and detail, even to the section of the basement below the auditorium.

A very striking design for the synagogue is that by Ed. Collamarini and Gustavo Tognetti, of Rome. This at first sight reminds us of an Indian temple; on closer examination the detail is seen to be a combination of Neo-Grec, Byzantine, and Moorish. The central area is larger than in the design just noticed, with narrower aisles around for the galleries, and is surmounted by a cupola of irregular decagonal form, carried on pendentives from the great semi-circular arches, enclosing the central area. The elevations are lightly tinted over a pencil drawing to represent white stone, with bands of blue, and are strongly shaded in sepia. A projecting portico forms the entrance in the centre of the principal façade. The design by Tito Caressa and Professor Francesco Fase is in a Moorish style, with a Byzantinesque dome; the entrance is marked by a group of three arches of moderate dimensions; the drawings are executed in ink, faintly tinted in sepia, and a coloured perspective is also submitted. Dante Viriani has adopted an Arabesque type of design, with horse-shoe arches, a triple arrangement of which forms the entrance under a great arch springing from the staircase turrets at each angle, which are carried up and completed with small domes. The principal dome over the central area is of circular plan and flattish section, lit by windows in the lower part of the shell in a Byzantinesque manner. The elevations are tinted in warm buff, with bands of deeper tone, and shaded in a purplish tint. The design by A. Lasciere is in a Moorish style, with a very flat dome over the central area, not visible externally. The chief façade has a great arch over a triple arcaded entrance, and the towers at the side are carried up to a considerable height with small pointed circular domes of Turkish outline. Guiseppe Guastalla, of Turin, also adopts a Moorish style, but the detail is very thin and flat, and, like several others, the design has a great semi-circular arch over the front, surmounted by a straight cornice. The central area is covered by a flat internal dome, not shown externally, and the interior is intended to be elaborately decorated in a Hispano-Moresque manner.

Of Christian ecclesiastical buildings there are several examples in the Exhibition, showing the work of modern Italian architects in this direction. The most usually adopted style is the Romanesque of Northern Italy, but, as a general rule, this particularly difficult style is not treated with satisfactory results, and there is in particular a noticeable lack of coherence in very many of the designs. One of the greatest masters of Italian Mediæval work, as far as we can gather from this Exhibition, was the late Conte Edoardo Arborio Mella, whose numerous works show a thorough knowledge of the Lombardic Romanesque period, and an ability in the use of that style for modern building, which appears to be wanting in the designs of many of his successors. The Conte Mella was a voluminous writer on the Mediæval ecclesiastical architecture of Northern Italy, and his work entitled "Elementi dell' Architettura Romano-Bizantina detta Lombarda" is a most careful and painstaking account of the architecture of the Lombardic Romanesque period. Conte Mella's work on the Gothic of North Italy is also highly interesting, and in it he takes considerable pains to elucidate the system of triangulation, which he believes was adopted by the Mediæval designers in determining the proportions of their buildings. The premiated designs for the façade of S. Petronio, Bologna, submitted in 1887 by Edoardo Collamarini and by Guiseppe Ceri, are very interesting, and either would make a satisfactory frontispiece to the church. The main point of difference between the two is that the design by Collamarini shows flat-pitched roofs, while that of Ceri has high-pointed gables. The interest attaching to these designs is heightened by the exhibition of earlier attempts at the same problem; the original drawings of Maestro Domenico di Jani, date 1512—1514; of Francesco Terribilia, 1572; of Enrico Brunetti Rodati, 1857; and of Guiseppe Modonesi, 1846, being hung in close proximity. The design by Maestro Domenico has a central gable of ogee form, with pointed gables of moderate pitch, over the side aisles. The wall surface is divided up into parallelograms, and in the centre over the chief doorway is a two-light Pointed window, with geometrical tracery, flanked on either side by a square-headed single-light window. The design of Terribilia has a central pointed gable of about 55 deg. pitch, with steeper gables over the side aisles. A similar treatment of the wall surface is adopted, but the central fenestration is changed to a three-light pointed traceried window. Without undue partiality for modern work, we can fairly say that the designs of 1887 are far more satisfactory works of architecture than those of the sixteenth century.

The modern Church of S. Antonio da Padova, erected at Turin in 1883-87 from the designs of Alberta Porta, is illustrated by a well-executed model of the façade, the main feature of which is a great semi-circular arch spanning the width of the nave, with a fresco in the tympanum. The principal doorway stands in the centre of the façade, under the great arch, but entirely lacks connexion with the remainder of the composition. Thus the design, which is in detail based upon the Lombardic Romanesque style, well illustrates the usual failing of the modern Italian church architect, who simply collects details, not always of the most pleasing or refined character, from the work of the past, but fails to weld them successfully into a homogenous design. Another modern church by the same architect—that of S. Pietro in Vincoli, at Bagnolo, Piedmont—similarly illustrates the tendency of modern ecclesiastical architecture in Italy. A design for a church at Castino, by Frizini, showing a very lofty aisle-less nave, and another at Pesinio, by the same architect, a basilican church with aisles, the nave arcade consisting of two bays only, show a lack of proportion which the use of features of abnormal dimensions leads us to believe is a common failing in modern Italy.

Another notable instance of unfortunate proportion is seen in the parish church design by F. Scarampi di Villanuova and Rivetti, where the interior, shown by photographs, although scaling some 60 ft. to the crown of the vaulting, looks quite depressingly low,—an effect largely due to the size of the bays of the nave, which, in the usual Romanesque manner, is vaulted in square compartments with semi-circular arches, each bay of the nave comprising two of the aisles. The scale of the building internally is still further dwarfed by the large size of the blocks in the alternating bands of light and dark stone employed in the piers and arches. The photographs of the interior show some excellently executed coloured decoration, the work of G. Rollini, which, while thoroughly Byzantine in scheme and general treatment, shows a correctness of figure drawing which it would be mere pedantry to ignore in modern work. Externally, the design is an extremely poor version of Lombardic Romanesque, lacking in cohesion to a supreme degree.

In connexion with the execution of the new façade to the Cathedral at Florence, carried out from the designs of Professor Emilio de Fabris, and completed after his death by Professor del Moro, there are exhibited large size photographs of Professor de Fabris' alternative designs for the façade, showing the difference of effect, according as pointed gables or low-pitched roofs were adopted for the culminating features over the nave and aisles.

In a competition design for a parochial church, exhibited by Camillo Pistrucci, is seen an attempt at a somewhat original plan, consisting of a long nave and chancel with transepts, but without aisles, or rather the aisles are external to the church, and form loggie. The crossing of nave and transepts is covered by a dome, which is circular internally, and is terminated externally by an octagonal lantern. Beyond the crossing is the high altar, also with a dome over it, which, however, does not show externally, being wholly contained in the roof. Flanking the high altar on plan are transeptal projections, in which the sacristies are located. The choir is eastward of the high altar, the seats being returned in semi-circular form at the extreme east. The church is terminated by an octagonal apse, with chapels of similar form on the diagonal sides. At the west end there is on the north side an octagonal baptistery, with a chapel of corresponding plan to balance it on the south side. Between these are three western entrances, and there are besides no less than five separate and distinct entrances on each side of the church. The style adopted is Italian Romanesque, the prominent features being the octagonal lantern over the crossing, and a tower at the west end, surmounted by a spire resting most uncomfortably on flat pediments terminating the tower walls,—a feature which shows the tendency of modern Italian church architects to follow closely the lines of Mediæval detail without too carefully considering the nature of the effect produced. Perhaps, however, to an Italian there may be some charm about such a piece of composition, though to Northern eyes the result is most uncomfortable. Apart from this, the tower and spire look too thin for the design of the building, which generally looks long and low, and, mainly from its number of features, lacks repose and dignity, without, however, obtaining picturesqueness.

A somewhat special and interesting example of ecclesiastical work is seen in the design by Giovanni Ferrogio, for the extension and completion of the Hospice di Oropa, a famous pilgrimage church some sixty miles from Turin, which is situated on rising ground, lending itself to a fine architectural and scenic effect. In this case it is proposed to extend the buildings further up the hill, forming an avenue to the new church intended to be erected on the highest point of the hospice. The design for the church is adopted from that prepared by Galletti, but not carried out. This is to be enlarged, however, in the proportion of 4 to 3, by simply modifying the scale of the original drawings. The regulation of the levels and gradients is elaborately shown by contour lines on the plans, which evidence once again the engineering knowledge of the Italian architect.

Competitions for the laying out of cemeteries seem to be as attractive to the Italian competing architect as to the English, and several good designs of elaborate character are exhibited. These usually show a rectangular arrangement of the ground with a cloister round, an imposing entrance, and a chapel at the opposite side. In Moretti's design for the cemetery at Musocco, near Milan, Greek Doric, with somewhat of the French Neo-Grec feeling, is adopted, and shown in an exquisitely-shaded set of drawings. The cemetery at Pavia has been carried out from the designs of Angelo Tavolo, in Italian Romanesque, which style is here somewhat successfully treated.

Some few examples of school planning are exhibited, and show careful attention to the special requirements of educational science. Dual desks are usually adopted, and the rooms are made deep rather than long, the desks being arranged in rows of four or five and ten to twelve rows deep. The windows are then placed down one side, so that left-hand lighting is obtained, a point to which considerable attention is paid. A design for the Communal School at Ampezzo, by G. Falcioni, of Udine, is a good example. Here, on the ground-floor, are three class-rooms for 100, 96, and 64 children respectively, the larger numbers being those of the lowest grades. There is no hall for general assembly, but a gymnasium, about 24 ft. by 50 ft., is provided, this being a feature found in the majority of school plans. On the first floor are three more class-rooms and rooms for mistresses, apparently residential.

In the design for a new school in the Via Galiari, Turin, by C. Boito, each class-room has its separate cloak-room, and is lit on both sides, a wide corridor running along on one side of the class-rooms; all the rooms are carefully arranged to have a south-west aspect, and, in addition to the gymnasium, four rooms for manual work are provided.

In the planning of hospitals, a modern example is the design for a large hospital at Turin, prepared by Dr. G. Spantigati and Engineer A. Perincioli. The hospital is arranged on the pavilion system, but the plan of the pavilions is not all that can be desired. The ward kitchen, lavatory, and bath-room open immediately into the ward, and, being placed against the side walls, absorb some of the space which might with advantage be occupied by windows, of which there are too few, one only being allowed for every two beds. The whole of the pavilions are in one storey and basement under, with fireproof ceiling, and are connected by open galleries, with subway under for tramways from the administration block. Considerations of aspect do not appear to have been strictly regarded, as the wards have every possible variety of aspect, a result partly due to the disposition of the pavilions upon the irregular shaped site. Certain pavilions in proximity to the operating theatre are especially allotted to the clinical school, while separate blocks are provided for ophthalmic, skin, and other special diseases, and for contagious diseases. The scheme also includes an anatomical and pathological school.

In the design for a hospital for contagious diseases at Milan, by Giovanni Giochi, isolated blocks connected by a light, open gallery and subway from the kitchen, are employed, and special care is taken to provide ample ventilation, both by placing a window between each bed, and by forcing in fresh air by a fan from a central ventilator. A well-arranged and fitted steam laundry is placed in a separate block.

As an example of lunatic asylums we have the plans of one at Florence for 600 patients. Here the system adopted has been to divide the patients into different classes and to locate these in separate blocks, rendered to a large degree independent and self contained, no common dining-hall being provided. The divisions of classes made are, Quiet, Infirm and Paralytic, Suicidal, Epileptic, and Chronic and Acute. Comparatively few single rooms are provided, except to the block appropriated to acute patients, which is wholly detached from the remainder of the asylum, and is largely made up of single rooms.

In domestic architecture there are two distinct types of residence which the modern Italian architect is called upon to design; the one, the detached private residence standing in its own grounds, the other, the suite of rooms forming part of an immense block let out in separate flats and usually called a palace, in distinction to the villa. Some of the designs for villas, as represented in photographs from the executed buildings, are among the happiest efforts of modern Italian architectural art. An admirable instance of this is the design of the Villa Maggia, in Sordevolo, Turin, by C. Gilodi. The main house is a rectangular block; on one face is a projecting porch of Ionic columns, not uniformly spaced, on another face is a one-story circular bay, also ornamented with engaged Ionic columns. The first-floor windows are treated with the conventional order and pediment dressings, and above a richly-carved frieze of amorini and scroll work, embracing circular windows, leads to a bold cornice, the whole forming a charming composition, the effect of which is to no slight extent enhanced by the rapid falling away of the ground and the boldly rusticated part-basement necessitated.

Another pleasing example of the villa is the Villino Romanelli, erected in the Corso Loreto, at Milan, and designed by Romeo Bottelli. This, again, is a square block, with a loggia brought forward on the ground-floor, formed of three arcaded bays divided by rusticated Doric columns. The central feature of the façade on the first-floor is a two-light arched window opening, surmounted by a segmental pediment carried by two rich Corinthian columns. The blemish on the design is that at the sides of the central feature are square-headed windows, with a heavy cornice on consoles, which both in size and detail appear quite incongruous with the central part of the design. Signori Musso & Copperi, of Turin, exhibit several designs for villas, one for Copperi himself. Their plans are usually less formal than those just described, and advantage is taken of breaks in the plan to provide niches for galleries and loggie that add largely to the pleasing effect of the designs, which are mainly Italian Renaissance of the Farnesina type. Occasionally what may be called fancy styles are adopted for country houses or seaside residences, as in the designs for the Villa Marsaglia, at San Remo, by Rivetti, which is an attempt at a Moresco treatment, with alternating bands of brick and stone. Other designers have based their work on the châlet of Switzerland and the Italian Alps, these naturally being carried out in wood.

The residences in flats form, of course, by far the larger number of the town buildings of modern Italy, and it would be impossible almost for us to give a detailed account of the numerous examples illustrated in the exhibition. Few plans are shown, but the general idea is to group the various suites around a central courtyard. In each suite the rooms are intercommunicating, but corridors are also in more modern instances provided to facilitate ingress to any particular room without passing through two or three others. In their external treatment uniformity of plane is the predominant characteristic. The various methods in which the openings are decorated differ, of course, largely. Some of the most successful have been those in which the later phases of the Renaissance have been taken as models. The abandon and fertility of invention that characterise the Rococo and Baroco styles appear to be particularly suited to the temperament of the modern Italian designer. One universally adopted means of enlivening the dulness of these façades is the use of balconies, and efforts are made to group balconies and to vary them in design, sometimes even in material, stone and iron. In Turin itself the favourite loggia is extensively used, and assists in giving considerable dignity to some of the otherwise monotonous façades.

Shops are for the most part merely the ground-story of the palazzo devoted to flats, but there are one or two attempts to follow the Magasins du Louvre and au Printemps of Paris, as models for business premises for the Bocconi, the Whiteleys of Italy. These in their mad desire for plate-glass lead to the perpetration of some very unfortunate pieces of design; the establishment at Rome having, for example, no less than three floors to one arched opening filled with plate-glass from top to bottom. Where the shop-front retires behind an arcaded loggia, as in the Milanese example, the opportunity for good design is more favourable. Between the flats and the shops the street architecture of modern Italy tends to become intensely monotonous and uninteresting.

THE LABOUR MOVEMENT IN AMERICA.

THE labour movement, as it is commonly but perhaps not very happily termed, will certainly occupy very many pages of the historian who will some day write the history of the last half of the nineteenth century. The very fact that it is in some form or another constantly present to the attention of the most casual of the observers of contemporary events tends considerably to deaden its importance in the mind. But it is not only the labour question in Great Britain which is of importance to the people of this country; commerce is of so international a character that the labour movement in other countries must be watched in order that its effects may be observed on our own labour market. Hence the work[*] the title of which stands at the head of this article is especially welcome at the present time. It will give readers in this country an opportunity of becoming acquainted with the history and characteristics of the movement in America, which has certainly had some marked effects on the same movement in Great Britain. The work itself contains such a large mass of facts that it would be impossible in our space to give anything like a comprehensive sketch of the entire book. There are chapters, for example, on "Early American Communism," on the "Economic Value of Labour Organisations," on the "Socialistic Labour Party," and so on, all of which are full of interest to any one who has given the least thought to this most momentous question. But we shall restrict ourselves to the chapter on "The Growth and Present Condition of Labour Organisations in America," since it is the one which best indicates the characteristics and the progress of the labour movement beyond the Atlantic.

The beginnings of trades unionism are visible in a crude form in the very first years of the century, and the modern machinery of strikes is visible also at the same time. There is evidence of this in the year 1802. "The sailors in New York received 10 dollars a month, but wished an increase of 4 dollars, and endeavoured to enforce their demands by quitting work." They marched about the city with a band, and compelled other seamen employed at the old wages to leave their ships, but "the constables arrested the leader, lodged him in gaol, and so ended the earliest of labour strikes." We mention this incident because there is a popular impression that strikes are features of very recent growth; on the contrary, a rule of the constitution of a body called "The General Trades Unions of the City of New York," which was in existence in the year 1833, states that "no trade or art shall strike for higher wages than they at present receive without the sanction of the Convention." Thus it is obvious that in the Eastern States of the Union strikes were a well-recognised means of obtaining higher wages at the end of the first quarter of the present century. But the power to strike implies more or less of cohesion and combination among working men, and therefore it is equally clear that by this time the system of trades unions was already in existence. In the earlier years of the growth of unionism the chief centres of the movement were Boston and New York. The General Trades Union which we have just mentioned was a New York union, and was a combination of subordinate unions of the various trades and arts in New York city and in its vicinity, and in Dr. Ely's opinion "is the earliest example in the United States of those central labour unions which attempt to unite all the working men in one locality in one body, and which have now become so common among us." Again, a pamphlet is quoted by the author containing an address before a working men's society in Massachusetts in 1831 in which the speaker congratulates his audience on the working men's associations as being, though comparatively new, yet growing in number and importance. We must, however, wait for a good many years before we can find trades unions in great numbers. They are essentially the results of large populations, of keen competition, and of an aggregate of capital. These conditions, it goes without saying, are far more characteristic of the later years of the United States, and therefore it is not a matter of surprise that trades unionism has shown a marvellous growth in the last thirty years. Thus we find it is the year 1865 when the Bricklayers' and Masons' International Union of America was formed. The establishing of such a union as this shows at once the comparative paucity of labour organisations in the earlier years of the century, and indicates with clearness the historical period of their development. In the year 1869 the society, now one of the most powerful and remarkable labour organisations in the world, "The Knights of Labour," was formed. The founder was one Uriah S. Stevens, a tailor of Philadelphia, who called together eight friends, who were the nucleus of a body now numbering many thousand members.

Having reached the formation of this society, it would be useless to enumerate others which have since been formed. It is of greater interest to turn to the constitution of these bodies. The original unions were chiefly, in fact entirely, for the purpose of organising the workmen in separate trades, to obtain better wages and shorter hours. These, of course, have still been continued, but there has followed on the union of individuals a union of unions. Thus the Journeymen Bricklayers' Protective Association of Philadelphia was formed in 1880, and now contains two thousand members. The resolution at the end of the preamble states that this body is established "to maintain a fair rate of wages, encourage members to advance themselves in their trade, to fraternise in a spirit of harmony, and use every means which may tend to the elevation of bricklayers in the social scale of life." Here we have a purely selfish trade organisation, that is to say, one which is concerned only with the interests of a particular trade. But there have also sprung into existence such combinations as the Federation of Organised Trades and Labour Unions, which "aims to promote the common interest of all trades unions and labour organisations, and to watch the course of legislation in order to promote that which is considered beneficial and to express that which is regarded as injurious." But central labour unions such as the "General Trades Union of the City of Cincinnati" now exist all over the United States, and at the present time we find unions of individuals, and what we have called unions of unions, so that labour across the Atlantic is thoroughly organised from top to bottom. In this country the size and vastness of the organisation is not easy of realisation, because we can scarcely properly picture the numerous and great cities spread throughout the equally great territory of the Union. It places labour in a most powerful position, since it enables it to be in a comparatively stronger position than organised capital which, in a much smaller country like England, is capable of much greater combination, and is thus *pro tanto* more powerful than in the United States. For this reason the frequent success of labour over capital in the United States, when contests have arisen between them, does not necessarily forbode the same amount of success in this country.

But there have also come into existence associations of workmen which, in principle, are antagonistic to the older union. Of these, that to which we have already alluded, —the Knights of Labour,—appears to be the most powerful. These associations are antagonistic, in a sense, to the more restricted trades unions, because they are formed to benefit the working-man generally, without distinction of trade or of capacity, or, it appears, of sex. For the twenty-second article of its constitution states that the object of this Association is "to secure for *both* sexes equal pay for equal work," by which, we presume, is meant a fair day's pay for a fair day's work. But an Association which does not discriminate between trades, or between skilled and unskilled workmen, is one which, though it may, and does, contain members of trades unions in the strict sense, can hardly fail, some day, to come into active opposition with the older form of union, and may even, in spite of its present power and strength, degenerate into an association of quite unskilled labourers. Again, the constitution of the Knights of Labour shows that this body, the numbers of which are sometimes reckoned by millions, has set before itself a much more ambitious programme than does the ordinary union; one of its objects, for example, is "the removal of unjust technicalities, delays, and discriminations in the administration of justice," and another "that a graduated income-tax be levied." In other words, the object of this Association is to obtain, by legislation from the State, or by compulsion through its powers from employers, anything which will benefit the working class generally, or, to use the vague phraseology of the constitution of the Association, it seeks to enable workers "to share in the gains and honours of advancing civilisation." While most men will smile at the grandiloquent language of this document, it would be foolish to underestimate the strength of this body or its capacity for good or ill. It brings out clearly a remarkable feature of the labour movements of the day, the vague, half-socialistic desires of large bodies of working men, to some extent the results and to some extent the moving forces of modern trades unionism. To consider these in all their bearings would be to embark on the consideration of trades unionism throughout the world. We must content ourselves with having indicated briefly the general character of the growth of trades unionism in the United States, with having noticed its appearance in the first twenty-five years of the century, its growth towards the middle of it, its rapid increases in the last twenty years, together with its three broad phases: the combination of individuals belonging to a particular trade, then the organisation into associations of these simple trades unions, and lastly the creation of societies of workers, without regard to trade, capacity, or sex, somewhat socialistic in tendency, and with the largest and most vague aims.

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THE current number[*] of the "Geological Magazine" contains an interesting article by Mr. J. G. Goodchild, F.G.S., on the "Weathering of Limestones." He commences by referring to a previous article on the same subject, written by him in that magazine in 1875, in which he gave some data upon the rate of weathering of certain limestones, deduced from the observed extent of waste that had affected some tombstones in the churchyard of Kirkby Stephen. The mean of several observations gave as the rate of solution about one inch in five hundred years for stones that were standing erect; the author was unable to find any dated tombstones there lying flat, but is of opinion that disintegration on similar stones in that position would be much accelerated. The estimate above given did not take into account the fact that after being subjected to atmospheric erosion for several years the rate of waste is materially increased by the multiplication of the surfaces presented to the denuding agents. Denudation may take place (1) along the original planes of deposition of the rock, or (2) follow those obscure planes of separation along which the stone will most readily dress, or (3) along planes parallel to the dressed surface. After the lapse of a few years limestone may, and often does, weather by the detachment of flake after flake from its exposed surface. Taking these things into consideration, the author concludes that we may "safely assign to this rock a rate of destruction treble or quadruple that given in the estimate above." From further observations on limestones generally, he says that those which contain an unusual percentage of clayey matter appear to waste at the highest rate, whilst the compact, well-bedded limestones, that include much bituminous matter in their composition, stand at the other extremity. He gives an instance, however, where stone of the latter description, having lain on a disused and very wet road for about twenty-five years, weathered at a considerable rate. On examining several pieces, he states that "it was perfectly evident that since the road had ceased to be used as a cart-road, the surface-waters had etched away the limestone to a depth of at least one-sixth of an inch, leaving the sharp edges of the fossils standing out to that extent in relief, to testify to the quantity of the surrounding matrix that had been dissolved and carried away in the meantime." Another case is given where an exposure to the weather for ten years, in a railway-cutting near Penrith, lowered the general surface of a limestone about one-thirtieth of an inch; whilst a limestone quarried in Millgill, and used hard by in the construction of the railway station at Askrigg, in Wensleydale, was similarly reduced by about one-twentieth of an inch in twelve years, as exhibited by the fossil remains carved in relief. Scrutinising the results arrived at, the methods by which they were obtained, and bearing in mind the large problems which they are intended to partially elucidate, we are at the outset struck by the great want of detailed description of the materials referred to in the article, by which alone we could hope to fully grasp the import of the communication. Reviewing the general scope of the observations, however, we deny that it is possible to get even a slight approximation of the rate of weathering of limestones over long periods from an examination of the effects of a few years only. The author has to a certain extent felt this himself, for, after calculating the rate per inch as indicated by each of the above-mentioned cases (one of which, by the bye, is worked out erroneously), he draws up an average rate of disintegration, and then, in making allowance for accelerated action as the weathering proceeds, he finally states that he believes that "we shall not err greatly in assigning at least double the rate of erosion to limestone generally." To us this appears to be rather a loose method of computation, and conveys the impression that the known rates of weathering as given in the article must be supplemented by a certain amount of guesswork before anything approaching a satisfactory solution of the problem can be hoped for. We hold that the number of observations made as to the rate of weathering of stone, is at present much too limited to enable anyone to judge of the matter; the few additional instances quoted by the author are useful as a further instalment to our knowledge of the subject, and they have a considerable practical bearing in regard to the durability of the particular kinds of stone referred to, and herein consists the chief value of his communication. In other words, the author's scientific facts may be accepted, but not his inferences. It is perfectly possible to arrive at the approximate and comparative rate of waste of a given limestone from observation on old buildings and otherwise, but the general question of the rate of disintegration of limestones as a class must still remain *sub judice*.

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[*] "The Labour Movement in America." By Richard T. Ely. London: William Heinemann. 1890.

[*] Geol. Mag. N.S. Dec. III., vol. VII., Oct. 1890, p. 463, *et seq.*

THE President of the Local Government Board has issued a circular to the various local authorities throughout the country, and also to the County Councils, calling their attention to the Housing of the Working Classes Act, 1890, and the necessity of putting its provisions as to the sanitary state of workmen's dwellings into force. Mr. Ritchie urges on local authorities "a strenuous and judicious exercise" of the powers of this Act, which is not only a Consolidation Act, but contains some new provisions. His object in addressing County Councils, is because these bodies can make use of the powers of the Act in cases of default by the Rural Sanitary Authorities. These circulars are admirable, but they have the fatal weakness of being simply good advice. Mr. Ritchie has no power to enforce the law,—it rests with the local authorities to do this. The consequence is that careless local authorities will simply let the circular lie on the table, and the County Council, of course, cannot do anything until representations have been made to them that the local authorities are in default. Moreover, it remains to be seen whether when such representations have been made to the County Councils they will take up these new duties with energy. The fact is, it is impossible to unite two antagonistic principles,—viz., local self-government and central governmental control. In this country we have adopted the former principle, and we must take it for better or worse. Circulars such as Mr. Ritchie has just issued are full of good intentions, but are practically worthless.

THE London Society for the Extension of University Teaching may count itself fortunate to have secured a course of lectures on Homeric Greece from the well-known scholar, Mr. Walter Leaf. The first lecture was given on Wednesday (October 15), at the Chelsea Town Hall, Sir Charles Newton taking the chair. Mr. Leaf distinctly stated that he approached the subject from its archæological, not from its literary, side,—his object being to illustrate the Iliad and Odyssey by reconstructing as far as possible the surroundings among which they were produced in the light of recent excavations. Twenty years ago we had simply no material with which to answer the question, has Homer a historic basis or not,—how far is the world he paints merely the realm of a poet's fancy. Now, thanks to Dr. Schliemann's spade and the logic of his co-operator, an answer, definite, if not complete, can be given. In the present lecture, Mr. Leaf dealt with the geography of the catalogue of the ships, and then passed to the excavations at Hissar-lik. He wisely wasted no time in detailing the errors into which Dr. Schliemann at first not unnaturally fell, but dwelt on the ground-plan (illustrated by the lantern) of the buildings, palace, citadel walls, and the two successive Propylæas now on all hands acknowledged to be associated with the Homeric Troy. Passing to Ithaca he showed that the topography of the Odyssey, unlike that of the Iliad, though in places clear and accurate, showed no consistent first-hand knowledge of the places dealt with, hence he concluded that the poem was compiled from more than one source,—a conclusion now widely accepted. Sir Charles Newton, in acknowledging a vote of thanks at the conclusion of the lecture, paid the lecturer a high compliment, saying that in his long and varied experience he had never heard the perplexed Homeric question so clearly stated. Subjects to follow are the Heroic fortresses and architecture, Homeric dress and armour, Homeric art.

THE problem of the restoration and significance of the "Venus of Milo" will possibly never be solved with certainty, but till it is solved it will not cease to exercise the ingenuity of archæologists. Mr. Ravaisson, at the recent meetings of the "Académie des Inscriptions" at Paris, has brought forward a theory which is in one respect satisfactory, that it makes the Venus one of a group, and thereby gives a motive to the at present unmeaning pose. Mr. Ravaisson believes not only that the statue was one of a group, but that he can lay his finger on the other statue that actually completed the group. This, he believes, is the well-known "Achilles" of the Louvre, which he holds to be an Ares. The group represented, according to him, the Love-goddess either disarming,—or, at least, quieting,—the War-god by laying her left hand on his shoulder. Mr. Ravaisson exhibited to the meeting casts of the two statues in this juxtaposition. So far, so good; but Mr. Ravaisson goes on to associate the original of the group with Alkamenes and Pheidias, and believes that this type of Venus was the famous "Venus of the Gardens." Here we cannot follow him, and still less when he places the district of the gardens near the Kerameikos, and hence apparently deduces the conclusion that the group was a sepulchral monument representing the heroized dead.

WE drew attention at the time of their discovery to the remarkable Vaphio cups, with their realistic representations of the catching and taming of wild bulls. Much has been written and spoken about the curiosities of their "barbaric" style, but till just now no one has undertaken to give a name to the race who made them. Herr Trendelenburg is, indeed, a bold man. In his paper (reported in a recent issue of the *Berliner Philologische Wochenschrift*, 1890, No. 39) he dares to utter the name *Pelasgian*. As the *Wochenschrift* observes, the Pelasgians have long been under a cloud. To every sound "archæologist" they have been of late inscribed with *noli me tangere*. But the tide is turning in their favour now, and it seems just possible that they may have to become responsible for the art, architecture, and civilisation generally that we group under the name Mycenean. The Cyclopean fortifications of the Acropolis at Athens were attributed by tradition to the Pelasgians; the very counterpart of these fortifications have been discovered at Mycenæ and Tiryns. The Pelasgians were a people accounted to pay honour to the dead and the chthonic gods; just such a worship is presupposed by the "bee-hive" tombs at Mycenæ, Spata, Orchomenos, and the like. It was the characteristic attainment of the Pelasgians that they tamed oxen to bear the yoke. This is the very work in which they are engaged on the Vaphio cups and on the curious mural painting at Tiryns. Certainly the theory is worth consideration.

WE read in the *Daily News* that the Principal and dons of Brasenose College, Oxford, accorded last week a high and ceremonious welcome to the arrival in their midst of the "brazen nose" from Stamford, Lincolnshire. A. à Wood describes this relic as being a face or head of old cast brass, with a ring through the nose thereof, affixed to the gate-wicket of the "Brazen Nose" in that town. Some doubt appears to still remain whether it was carried to Stamford on the secession, for three months in 1334, of students from Brasenose, Oxford; or whether, finding it there, they adopted the sign for their own style and name. At the end of the thirteenth century Stamford University so called,—though never, we take it, a *Universitas* in the common acceptance of the term,—comprised certain colleges and halls. Amongst these were reckoned Robert Luttrell's Sempringham Hall, founded in 1292, for Gilbertine students, and named after the birthplace of the founder of that monastic order; Henry de Hana's Carmelite College; the St. Leonard's Priory, attached to Durham; Peterborough Hall; Black Hall; Vauldrey Hall, for students from the Cistercian Abbey of Vauldrey (*de valle Dei*), near to Grimsthorpe; and Brasenose College.[*] Royal authority suppressed Stamford in 1335; the gate of its Brasenose, in St. Paul's-street, has remained to our own day. The King's Hall and College under that name at Oxford was founded in the interval 1509-12 by William Smyth, Bishop of Lincoln, and Sir Richard Sutton, Knt., of Prestbury, Cheshire. They obtained from Oriel and University Colleges, respectively, leases of Salisbury and St. Mary's Entry Hostels, and of Brasenose and Little University Halls. The site also included those of the Staple, Black, Haberdashers, and Little Edmund Halls; together with that, reputedly, of the *brasinium* (brew-house, or brasserie) appertaining to King Alfred's Palace in that city. Polydore Vergil, though did he stand alone we should scarcely take his authority, thus refers to the nose:—

> "Per id quoque tempus Gulielmus Smyth, Episcopus Lincolniensis, Margaritæ exemplo ductus, Oxonii scholasticorum collegium collocavit in aula quam vulgo vocant Brasyn Nose, hoc est æneum nasum, quod eo loco imago ærea facie admodum immani pro foribus extet."

An inquisition of date 1278, quoted by à Wood, and cited in Ingram's "Memorials of Oxford," mentions Brasen Nose Hall there. The name is also traced farther back, to Henry III.'s reign. A nose, fashioned of metal, over one of the college gates which faces the Radcliffe, has been familiar to several generations since. We have lately illustrated and described Mr. T

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[*] For this list we are indebted to a paper, *ad hoc*, read by the Rev. E. G. Wood, at a meeting of the Cambridge Antiquarian Society, on October 29, 1888.

G. Jackson's plans and designs[*] for the new quadrangle at Brasenose, between St. Mary's and Lincoln College and All Saints'. For these buildings a clearance was made of some tenements in the adjoining Amsterdam-court, which has perpetuated, in name and site, the memory of the ancient Amsterdam or Broadgates Hall.

IT may be of interest, not only to those members of the profession who have had their work hung at this year's Munich Art Exhibition, but also to our readers in general, to hear that the Scotch and English work exhibited in the Bavarian capital has been viewed throughout the summer with great interest both by artist and layman, and that very complete criticisms on it have appeared in the local press. These criticisms are, on the whole, very favourable ones; they treat the draughtsmanship with special admiration, and the designs themselves for the most part very fairly. The German critics are, however, somewhat sarcastic as to the want of plans, and express their surprise that members of a practical nation should neglect to send in any kind of plan to explain designs, even in a miniature form. There would have been plenty of room for plans, and it is the custom to hang even large-size plans in a German architectural exhibition, as in a French one. The English architects are the only ones who regard an architectural exhibition as a mere collection of pictures. We have commented on this over and over again, and both French and German critics will take the same view. If our countrymen had paid more attention to this in their *envois* to Munich they would have done themselves more justice.

THE present "tightness" of the Money Market will, it is to be hoped, pass away without causing serious loss to persons engaged in building operations and building transactions generally. But there is no doubt that the present is a time of difficulty, financially speaking, and it is scarcely possible for such a period to pass away without leaving financial trouble in its track. For it is obvious that when city and business men are realising securities at a loss, the market for buildings must be very prejudicially affected, and sales, which in more easy times would be arranged, do not take place. Again, those who have borrowed money on building securities which they have hoped to see turned without undue delay into cash, cannot but be anxious, for banks and lenders of money have now to charge a high rate of interest, and are averse to keeping their money out of reach. But just as the present period is doing good in the City by stopping wild speculation, and breaking up rotten firms, so it does good in the same way in the building world. It checks the current of building speculations, it puts sound business firms on a better footing, and gives them a better chance against men who trade on credit. Such a period, indeed, as the present is certain to recur from time to time, and it is well that it should, for it acts as a kind of financial purge, checking improper business and leaving financial affairs in a sounder state when it has passed away, even though to some it is a period of ruin.

WE have frequently to point to the laxness of sanitary inspectors in rural districts. One reason no doubt is that if they carry out their duties properly, they necessarily make themselves disagreeable to many of their neighbours, and they dread to be considered "unneighbourly." The result is that they often neglect their duties. This hesitation to enforce the law is natural, but that is all the more reason why landowners and persons of influence should, to the utmost of their power, assist the sanitary authorities. From the following paragraph, which we extract from the *Buckinghamshire Advertiser*, it would appear that Lord Chesham does not bear this wholesome principle in mind: "In regard to the water supply at Londams Cottages, the authority resolved to do the work themselves, and to charge the work to Lord Chesham if it was not at once done." This, from the same report, appears to be the sequel to a number of ineffectual attempts to induce Lord Chesham to remedy a sanitary defect. When landowners in a high social position thus set a sanitary authority at defiance, it largely increases the difficulties, always great, which exist in the way of keeping a community in a proper state of sanitation.

THE case of the Bristol Trams and Carriage Company *v.* The Mayor and Corporation of Bristol, which is reported in the current number of the Law Reports, is one of much importance to tramway companies. The Bristol Trams Company was a company using the streets of Bristol for the purposes of its business, under the provisions of the Tramways Act, 1870. The Corporation of Bristol decided to lay down wood pavement in two of the streets used by the Trams Company; they proposed to do so not only outside the rails of the tramway, but between them. To this alteration the company very naturally objected, as the alteration would have caused much extra expense. Indeed, in many respects such an alteration would appear to be altogether inconsistent with tramway traffic, since there is so much stopping and starting in this kind of traffic. They demanded that the dispute should be referred to the Board of Trade for decision under the thirty-third Section of the Tramways Act, 1870. The Court of Appeal decided, however, that this section did not apply, since the power of the road authority to do the work objected to by the Company, was preserved by Section 60, which provides that nothing in the Act shall take away or affect any power which any road authority may have to widen, alter, divert, or improve any road. This decision is obviously correct, but still it is clear that it is one which may be very detrimental to the interests of Tramway Companies, who have thus no control over the material of which the streets are made.

THE churchyard of St. Mary the Virgin, Aldermanbury, has just been laid out for public resort, and is opened, from 10 to 4, except during the hours of service. The Metropolitan Public Gardens Association have provided some seats, and Mr. Deputy Rogers will present a drinking-fountain. This church, standing within Cripplegate Ward, of which the watchhouse formerly stood at its north-eastern corner, was built in 1677, after Wren's designs, at a cost of 5,237*l.* 3s. 6d. The tower has raised coigns and a high balustrade like that above the aisle walls. On the tower stands a lofty square turret, of which the upper stage has large railed openings, with a concaved roof, and vane. The tower windows, as also those of the aisles, have been filled in with heavy tracery in the Byzantine or Lombardic style. Into a vault on the northern side of the altar the remains of Judge Jeffreys were removed (1692) from the Tower, there to lie by those of his son, Lord Wem. Here, too, are buried Shakespeare's brother actors, Condell and Heminge. A cloister surrounded the graveyard of the earlier church, whereof mention is made by Ralph de Diceto, who was dean of St. Paul's towards the end of the twelfth century. Subsequently, it passed to the hospital or priory of St. Mary the Virgin, founded by William Elsing, by London-wall, and now represented by St. Alphage church. The name of Aldermanbury is commonly attributed to the fact that in this street stood the aldermen's bury or court; and Stow says, "I myself have seen the ruins of the old court hall in Aldermanbury-street, which of late hath been employed as a carpenter's yard." But the late George Godwin reminds us, in his "Churches of London," that at the end of the twelfth century the presentation to this church vested in one Aldermanbir, and that in 16 Henry III. Gervas alleges that his father Allen had presented one William, who died in 1202. Each of these worthies had for surname "de Aldermanbir"; yet it is possible they were so styled from the locality, and did not, on their own account, give their surname to the church.

THE uppermost floor of the recently-completed west wing of the Edinburgh Science and Art Museum has been utilised for the systematic display of the fine collection of Scottish minerals for which the Museum has been indebted to various donors. These donations are representative not only of the mineralogy but the geology of Scotland, and consist of three sections—(1) A collection of rock specimens; (2) a series of geological maps, sections, &c., published by the Geological Survey under the direction of Professor Geikie; (3) a series of fossils mostly from the Palæozoic Rocks. The specimens have been arranged, as far as possible, on a chronological basis, so that by a reference to the maps which they illustrate a student may be enabled to trace the tracts where the examples have been found. The collection forms probably the best of its kind ever brought together. To the general visitor the most attractive portion will be the fine specimens of Scottish gold and gems, comprising a series of polished agates, jaspers, cornelians, and serpentines. The portion of the museum where these exhibits are placed is remarkably well lighted, and the building, which is now completed, will, as a whole, bear favourable comparison with any other institution of the kind, whether in Britain or on the Continent.

THE London County Council acted for the best in confirming at their last meeting the order for a new sludge steamer for removing the London sewage out to sea. It is true that this can be only a temporary expedient, and that the cost of it is very great; but as it must be some years before any better scheme for disposing of the sewage can be carried out, even when resolved upon, it is necessary in the meantime that the river should be protected from the serious accumulation of foul mud which must go on increasing at or below the outfalls as long as the sewage is allowed to go into the river.

IN the course of a correspondence which has appeared for the last few weeks in our columns apropos of "A Sanitary Note from Greenock" it has been urged that the syphon trap disconnecting the house drain from the sewer should be discontinued, on the ground that it is a frequent cause of stoppage in drains and is of no sanitary value, inasmuch as, according to our correspondent Mr. E. Van Putten, the sewer, if properly laid and looked after, is less liable to contain offensive and dangerous emanations than the house drain itself. As the subject is of great importance and all the correspondents engaged in the argument seemed to be in earnest in their wish to recommend the best sanitary methods, we have given some space to their letters, but we fear that they have not led to anything very conclusive so far. Mr. Van Putten seems to forget that below the syphon there is often a considerable length of house-drain before the sewer with its "continuous flow" is reached, and that therefore by removing the lower syphon he is taking away the means of protecting the house from that portion of the drain, which, on his own theory, is liable to contain offensive matter that has not yet been fairly driven to the sewer by the closet flushing; nor can we accept his theory that the sewer is likely to be less charged with insanitary emanations than the house-drain. In a letter which he has forwarded to us in further reply to Mr. Buchan (but which we do not think it will serve any useful purpose to print as a continuation of a correspondence which has already occupied a good deal of space), he admits that the flow in the sewer varies very much at different times of the day, but urges that it is "comtinuous" in the sense opposite to "intermittent." That however seems rather a verbal than a real distinction: there are times of the day when the flow is too small to operate as a cleansing influence. He was right in calling attention to the inadequate amount of water often used for water-closet flushing, on which we have already commented, and on which point Mr. Buchan supports him. No doubt with an insufficient flush the syphon affords chances of stoppage which would not exist otherwise; but its advantages more than counterbalance this drawback, which with an ample flush from the closet is reduced to a minimum. With only one syphon under the closet-pan a communication with the sewer is opened, more or less, every time the pan is discharged: some of the air displaced in the pipe by the flush is likely to be driven up past it as well as down before it, especially where there is any upward pressure from the sewer, as often happens in elevated situations. Since it has been discovered that syphons do not do all they were supposed to do in cutting off foul air, there has been a counter-theory set up that they are of no value at all, which is an error on the other side. Nor does it by any means follow that they shut off free ventilation from the sewer and the length of drain immediately connected with it. Ventilation can be taken from immediately below the syphon and carried up to above the roof, if that method is desired. The most important point in the controversy is the long-debated one whether sewers are best and most safely ventilated into the roadways, or by upcast pipes carried up the houses; and this question is still far from being finally settled. We quite agree with Mr. Van Putten in having little faith in extract cowls, which depend on the action of wind, and are therefore useless in a perfectly still condition of the air, which is just when ventilation is most wanted. It would need a more extended series of experiments than have yet been carried out, to determine whether ventilating extracts carried to the tops of the houses are really free from danger of bringing foul air into the upper windows: and a more certain method of insuring the efficient action of such extracts must be found than cowls or reliance on opposition of currents formed by natural causes, the steady operation of which cannot be depended upon. Probably a ventilating upcast at intervals, operated by artificial heat, would be the most certain means of securing regular action; but for a large city this is a very large order to carry out completely. In the meantime our judgment is that the syphon between the soil pipe and the drain is not a thing to be lightly given up, and that greater evils would follow from doing so than any which can be shown to result from its use.

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[*] *The Builder*, June 4 and August 27, 1887; May 26, June 9, and August 4, 1888; and June 7, 1890.

THE ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

The "Nineteenth Annual Report of the Local Government Board, 1889-90," just issued,* is, as usual, an elaborate account of the complex details of the local administration of the country. It is of additional interest this year as containing some account of the first year's working of the Local Government Act, 1888,—the Act which created the County Councils. Details are given of the various proceedings which were taken for the purpose of bringing that Act into full operation on or before "the appointed day," April 1, 1889, at which date every County Council had to come into office, the date being, however, anticipated by some ten days in the case of London, owing to circumstances which will be in the recollection of our readers.

The "Report" itself, signed by Mr. Ritchie, the President of the Local Government Board, covers 186 pages, which are supplemented by 600 pages of appendices. The first section of the Report deals with the Local Government Act, 1888, and the County Councils. With regard to the financial aspect of this subject, the Report expresses satisfaction that the Imperial revenues which were ceded by the Act to the Councils of the Administrative Counties and County Boroughs of England and Wales, in substitution for local grants, had slightly exceeded the estimates which were formed concerning them. Into the details of this statement we need not enter; but before leaving this section of the Report we may quote one paragraph which is worth bearing in mind, viz.:—

> "By the Technical Instruction Act, 1889, County Councils have been authorised to make payments out of the County Fund for the purpose of supplying or aiding the supply of technical or manual instruction as defined by the Act, to such extent and on such terms as they think expedient, subject to the conditions imposed by the Act. One of these conditions is that the amount of the rate to be raised in any one year by a County Council for the purposes of the Act shall not exceed one penny in the pound. Money may, however, be borrowed for the purposes of the Act, subject to the provisions of the Local Government Act, 1888. County Councils may appoint Committees consisting either wholly or partly of members of their body to exercise any of their powers under the Act, except the raising of rates or the borrowing of money. Provision is also contained in the Act for a County Council being represented on the governing body of a school or institution receiving aid from them under the Act. The Town Councils of County Boroughs and other Municipal Boroughs have the same powers under the Act as County Councils."

The second section of the Report deals with "Relief of the Poor and the Poor-rate." We learn that on January 1, 1890, the total number of paupers of all classes in England and Wales in receipt of relief was 793,246, of whom 200,263 were indoor and 592,764 outdoor paupers, while 219 received both indoor and outdoor relief. As compared with January 1, 1889, these figures show a decrease of 4,495 indoor and 19,523 outdoor paupers, and an increase of 74 in the number of those receiving both indoor and outdoor relief. The decrease on the total number of paupers was 23,944, or 2·9 per cent. The population of England and Wales, as estimated by the Registrar-General, was 28,628,804 in the middle of the year 1888, and 29,015,613 in the middle of 1889. Taking these figures as the basis of calculation for the purpose of ascertaining the proportion to the population of the paupers relieved on the 1st of January of the two years 1889 and 1890 respectively, it appears, according to the Report, that the total number of paupers amounted approximately in the former year to 1 in every 35 persons, and in the latter year to 1 in every 37 persons. The cost of the relief of the poor, which was 8,440,821*l.* during the year ended at Lady Day, 1888, fell to 8,366,477*l.* during the year ended at Lady Day, 1889:—

> "The latter amount represented an average charge of 5s. 10½d. per head of the estimated population, being 1½d. per head less than in the preceding year, and an average rate of 1s. 1·4d. in the pound on the rateable value of the property liable to contribute to the poor-rate. In thirty-nine out of the forty-six preceding years, the average charge per head of the expenditure on the estimated population has been higher than in 1888-89, and in every previous year for which we have statistics of pauperism, with the exception of the year 1887, the average rate in the pound on the rateable value has also been higher."

These statements, taken in conjunction with others contained in the Reports of the Poor-law General Inspectors, printed among the appendices, are somewhat reassuring. For instance, Mr. R. Hedley, Inspector of the district comprising the Metropolis, refers to the satisfactory state of trade in London, and he points out that the strikes which occurred, though greatly to be regretted, indicated that there was a ready demand for able-bodied labour, and accordingly there had been very little able-bodied pauperism during the year in London. With respect to the arrangements for the relief of the indoor poor of the Metropolis, the Board during the year approved of plans for the reconstruction of the St. Pancras Workhouse; for an extension of the Hackney Workhouse and the St. Saviour's Workhouse at Newington; and for the erection of an auxiliary workhouse, with casual wards, for the Strand Union. Plans were also approved for married couples' quarters at the Fulham-road workhouse of the St. George's Union and the Holborn Union Workhouse at Mitcham, and for certain improvements in the administrative buildings at the Chelsea Workhouse. The Board also approved of plans for the extension of the St. Olave's Union Infirmary at Rotherhithe, and sanctioned certain additions to the lunatic wards at the Lambeth Infirmary. Plans for many new Poor-Law buildings outside the Metropolis were sanctioned by the Board; they are too numerous for mention here. The totals of expenditure sanctioned during the year for new Poor-Law buildings and the purchase of sites therefor were: For workhouses, 392,652*l.*; Metropolitan District Asylums, 19,028*l.*; District Schools, 27,114*l.*

"Public Health and Local Administration" is dealt with in the third section of the Report, which begins by giving statistics as to the extent to which the borrowing of money by Sanitary Authorities has been sanctioned by the Central Departments which have successively been entrusted with the administration of our sanitary laws. It appears that the total amount of the loans which were sanctioned by the old General Board of Health under the Public Health Act, 1848, up to September 1, 1858, when the Local Government Act, 1858, came into force, was 2,956,178*l.* The sanctions granted by the Secretary of State under the latter Act and the Sewage Utilisation Act, 1865, prior to August 19, 1871, amounted to 7,363,366*l.* Since its constitution on the date before named, August 19, 1871, the present Local Government Board has sanctioned the borrowing by Urban and Rural Sanitary Authorities of sums amounting in the aggregate, up to last year, to no less than 43,938,757*l.* The grand total of these figures, extending over forty-two years, is upwards of 54,000,000*l.* sterling, or upwards of a million and a quarter per annum. This money, as we now know, has not all been profitably spent, for sanitary engineering has been progressive, and mistakes which were committed thirty or forty years ago are not likely to be repeated in the present day. It is interesting to note that of the 43,000,000*l.* odd of loans sanctioned by the Local Government Board during its existence, by far the larger proportion, viz., 37,816,821*l.*, has been borrowed for sanitary purposes in Urban Districts. In respect of sanitary improvements in Rural Districts loans to the amount of 2,914,999*l.* were sanctioned during the same period. Under the Artisans' and Labourers' Dwellings Improvement Act, 1875, loans to the amount of 2,343,353*l.* have been sanctioned, and Joint Sewerage Boards have borrowed 1,155,359*l.*

Although the Report says that the number of defaulting Sanitary Authorities under Section 299 of the Public Health Act has perhaps never been so small since the passing of that Act as it was during the past year, the reports of the Engineering and Medical Inspectors of the Board afford melancholy evidence that many Sanitary Authorities are only not in default, technically or officially, simply because they have never been called to account for their shortcomings. It is only when some serious outbreak of illness has occurred that the inhabitants of rural villages and hamlets throw off their supineness and begin to regard the preservation of their health as a matter of more importance than "keeping down the rates." The extracts which we give almost weekly from the reports of Inspectors of the Local Government Board show that much,—very much,—remains to be done for the sanitation of rural districts. Of many a picturesque village whose situation in the midst of delightful country reminds the traveller of the poet's description of "Sweet Auburn," it can no longer be said that there "health" cheers "the labouring swain"; on the contrary, it is too often the lurking-place of typhoid and diphtheria.

It is satisfactory to note that the Board confirmed during the year no fewer than 370 series of by-laws made by Sanitary Authorities under the Public Health Act, 1875, the Public Health (Interments) Act, 1879, and the Acts incorporated with the first-mentioned Act. This number was considerably larger than the number of series of these by-laws confirmed in the previous year. The greatest increase was in the series relating to the regulation of offensive trades.

We can only mention in passing the record of much other useful work contained in the Report, such as the steps taken with regard to the enforcement of the provisions of the Rivers Pollution Prevention Act, 1876, and the Artisans' Dwellings Acts. We are glad to see that the Board is endeavouring to keep Sanitary Authorities up to the mark with regard to their powers in making regulations under the Dairies, Cowsheds, and Milk-shops Order of 1885. Milk is a very facile medium for the conveyance of infectious disease from country to town, and too much vigilance cannot be exercised in re-

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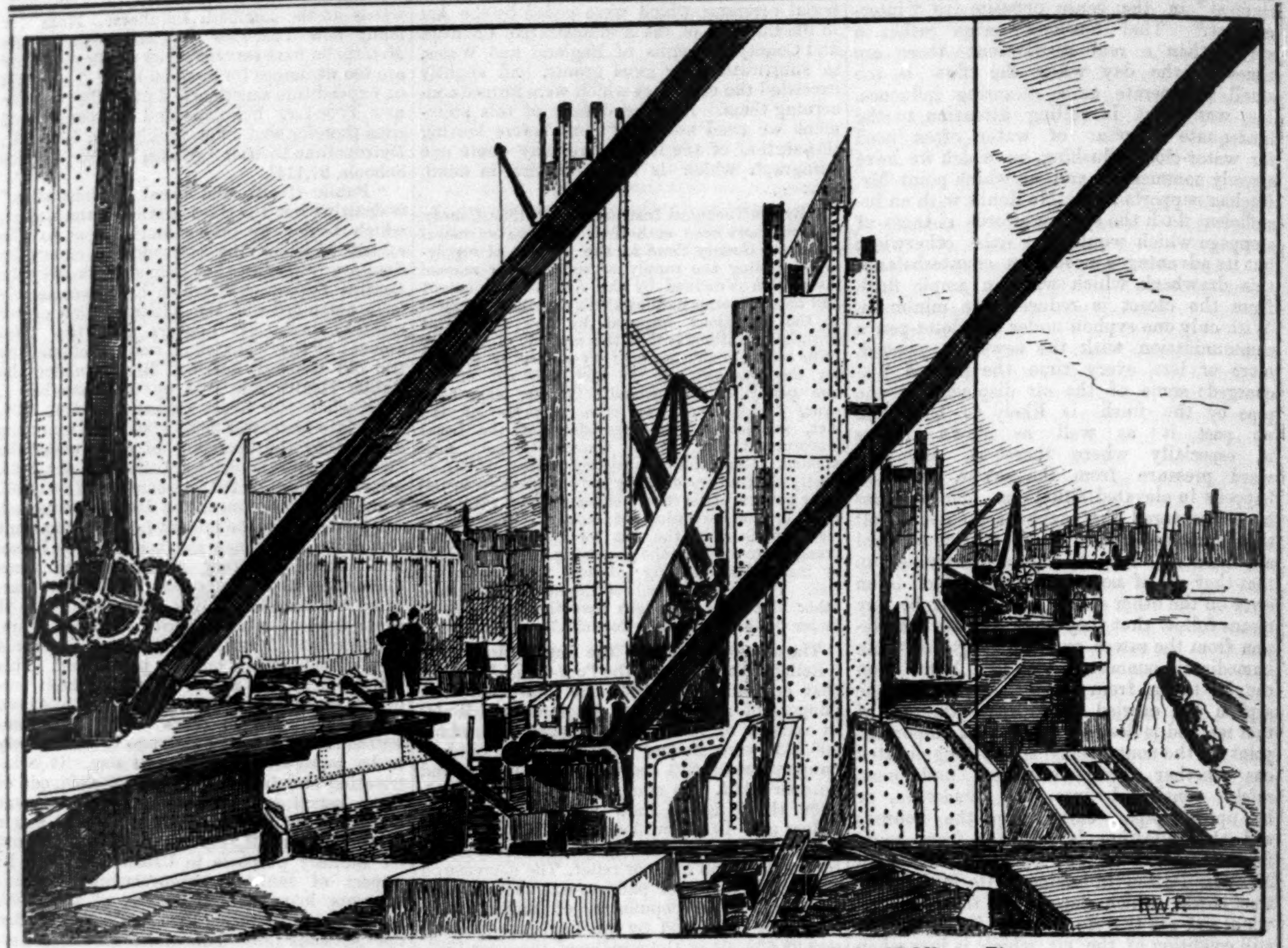

The Tower Bridge Works: Sketch Showing the Present State of the Middlesex Pier.

gard to the sanitary conditions of its supply. A safe and harmless precaution on the part of the consumer is to boil it before using it. The administration of the Canal Boats Act and the Sale of Food and Drugs Act form the subject of other interesting paragraphs in the Report. Good work is also, we are glad to find, being done under the Alkali, &c., Works Regulation Act. Mr. A. E. Fletcher, the Board's Chief Inspector under that Act, reports that steady progress is being made in diminishing the amount of noxious vapours discharged into the outer air from chemical factories. The new process for the recovery of sulphur from alkali waste is being largely adopted, and promises to materially diminish the nuisance arising from that waste, while adding to the profits of the manufacturers.

One of the most interesting and important subjects treated of in the Report is that of the London water supply. The reports of the Examiner under the Metropolis Water Act, 1871 (Major-General A. de C. Scott, R.E.), and of the Analyst (Professor Frankland, F.R.S.) on the water supplied by the eight metropolitan companies in 1889, are given as appendices to the Report. As to the quality of the water, Professor Frankland reports very favourably. According to his analyses, the mean proportion of organic impurity in the water delivered in London by the five companies deriving the chief part of their supply from the Thames was less than in any year since 1868, when the present system of analyses was begun, and was not much more than half the proportion in 1880, since which year the improvement had progressed pretty steadily. The water delivered by the two companies which chiefly depend on the River Lea for their supply was still better. These results, we are told, are due mainly to improvements in filtration, but partly to the fact that 1889 was, on the whole, a fine year in point of weather, there being, to quote Mr. Ritchie's words, "few floods to carry into the rivers the filth from cesspools, farms and ditches, and manured fields." These words alone should be sufficient to warn Londoners as to the possible dangers of their present water-supply. General Scott points out, as regards the river waters, that there is a marked augmentation of impurity, both suspended and in solution, in times of flood, and he calls attention to the serious fact that the rapid increase of population in the valley of the Thames and Lea tends to increase the difficulties connected with the diversion of sewage and refuse matters from the waters. To quote Mr. Ritchie's summary of General Scott's report:—

> "He remarks that in both valleys there are towns, villages, and detached houses the drainage from which reaches the water-courses in an imperfectly purified condition, and that the washings from manure spread over the fields are also apt to find their way into the stream. There is, therefore, necessity for constant vigilance both in securing the removal of all preventible sources of pollution, and in requiring that the methods of filtration adopted shall be as thorough and effective as possible."

This is all very well as far as it goes, but it does not go very far. Efficient filtration may be depended upon to remove the suspended impurities, but impurities in solution cannot be thus mechanically intercepted, and according to some authorities it is in these impurities in solution that the greatest danger of contagion lies. In view of the growth of the population of London and of the annually increasing amount of water taken out of the Upper Thames and the Lea by the water companies, it is clearly time that this question was grappled with on sanitary grounds, apart altogether from considerations arising out of the exactions made by the companies under cover of a laxly-worded Act of Parliament. The London County Council is now considering the question of acquiring the water companies. If those undertakings be acquired for the public, the price to be paid for them should, in equity to the ratepayers, be fixed with due regard both to the limited volume and the possible dangers of exisiting sources of supply.

According to General Scott, the average daily discharge of the Thames at Hampton, taking one day with another throughout the year, is 1,100 million gallons, and the dry-weather flow rarely falls below 300 million gallons daily. Now although the quantity of water daily abstracted from the Thames for the use of the metropolis (which is limited to a maximum of 130 million gallons in twenty-four hours) is but a small fraction of the average discharge, the question of real importance is, as General Scott points out, "the relation between the volume of discharge of the river and that necessarily abstracted, during exceptional droughts in the summer, when the first is at or near its minimum and the second simultaneously approaches to a maximum. This question derives its importance mainly from the fact that the metropolitan water companies collectively cannot impound more than seven days' supply of water at the present summer rate of consumption,* and practically they must take from the rivers and other sources day by day the quantity required by the population."

It is satisfactory to learn that the constant service supply is becoming every year more general in London.

The fourth and concluding section of the Report deals with "Local Taxation and Valuation." From the masses of figures in this part of the Report we pick out two items of interest. In the year 1888 the gross estimated rental value of property assessed to the poor-rates was 178,589,584*l.* and the rateable value was 149,696,812*l.*,—showing increases over the previous year of 634,709*l.* and 362,188*l.* respectively. The amount of the outstanding loans of Local Authorities at the end of the financial year 1887-8 was no less than 192,222,099*l.*

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THE TOWER BRIDGE.

We give a sketch this week showing the state of the work now being carried out at the new bridge which is being erected at the cost of the Corporation of London over the Thames at the Tower. Our view, which is taken from the west end of the north pier looking east, shows the large central well in the pier, into which the short arm of the moving leaf descends when the central span is open for the river traffic. The bases of the four steel columns, which will be inside the four corners of the large towers, are now practically completed, and it is anticipated that before the end of the year the steelwork on this pier will be built up to its full height.

The erection of the steelwork on the south pier is proceeding, but it is not so far advanced, however, as that on the north pier. Messrs. William Arrol & Co. are the contractors for the steelwork, and Messrs. Perry & Co. for the masonry.

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* The East London Company is excepted from this statement.

We gave a general view of the bridge, showing it as it will appear when completed, in our issue of July 3, 1886.

The architectural portion of the bridge was designed by the late Sir Horace Jones, City Architect. Mr. J. Wolfe Barry is the engineer-in-chief; Mr. E. W. Cruttwell is the resident engineer; and Mr. J. E. Tuit the engineer for Messrs. Wm. Arrol & Co.

We may mention that the Bridge House Estates Committee of the Corporation of London paid a visit of inspection to the works on the 30th ult., and, the temporary platform on which to lay the permanent superstructure of the two spans being now completed on both sides of the river, the Committee were able to traverse the whole distance to the centre abutments.

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NIAGARA FALLS FOR MOTIVE POWER.

The oft-proposed scheme for the industrial utilisation of Niagara Falls seems at last likely to become a fact. Of course, a small portion of the mighty body of falling water,—a mere dribble by comparison,—has for long been used as a means of supplying power on the United States side; the tail water of certain mills on the cliffs above the Rapids being a familiar feature in the landscape. The scheme which is at present on the point of being carried out is a very big thing, even in this land of big things. According to our American contemporary, *Engineering News*, work is to be commenced at once by the contractors, Messrs. Rogers & Clement, on behalf of the Cataract Construction Company, the corporation that has been formed to exploit the concession; and the Engineer to the company is now on this side to consult Sir William Thomson, who is interested in the matter. The proposed plan is to take from the Falls 120,000 horse-power, and about 1,400 acres of land have been secured for carrying out the operations. A water tunnel of 6,700 ft. in length, and 490 square feet in section, will have its intake at some point in the Niagara River above the Falls, and will deliver at a spot a short distance below the Falls,—probably near the upper Suspension Bridge. This vast conduit will, therefore, pass under the town of Niagara, and, at a suitable point, a central station will be constructed. The tunnel will be simply a tail-race, and mills or factories requiring power will be situated along its course; it being a part of the scheme to develop a large manufacturing centre in the neighbourhood of the Falls. Poets, painters, and all lovers of the grand works of nature may well be alarmed when they hear the details of this portentous scheme; but there is really less cause for fear than would at first sight appear. Niagara has been for generations handed over to the great army of sightseers, in no country more Philistine than in the United States, so that if a man's impressions are of so delicate a nature as to be marred by a commonplace crowd, Niagara can have no more charm for him now than if there were a thousand factories within reach. Exactly opposite the American fall there is a large hotel, with no more pretension to beauty than is possessed by the average American hotel; right on the brink of the Horse-shoe Fall there is a common-place building; whilst the railway runs just at the back; and the whole place swarms with photographers, flymen, guides, vendors of Brummagem curiosities, and touts of various descriptions. Within the last few years the two Governments have made a laudable endeavour to improve Niagara,—"to make our unparalleled cataract more attractive," as was said by an enthusiastic citizen of local fame. The land immediately contiguous to the Falls is now public property, whilst an effort has been made to clip and curl the surroundings into a genteel suburban aspect, which is strangely in contrast with the savage "Thunder of Waters." But nothing can vulgarise Niagara so long as it exists; even a "sky-sign" on its crest would not quite destroy its sublimity. The vital question, therefore, is whether the Cataract Construction Company will falsify its title by using up all the water, and becoming the Cataract Destruction Company. A single fact may set our minds at rest, for the present, in this respect. The company proposes, as we have said, to abstract water equal to 120,000 horse-power. If we allow 2 lb. of coal per horse-power per hour, this would give an equivalent of 5,760,000 lb. per day of twenty-four hours. That is a great deal of coal; but Sir William Siemens once calculated that if all the coal mined daily in the whole world were utilised for driving machinery to pump back Niagara it would be barely sufficient for the work. We have not the details of Sir William's calculation before us, and doubtless our readers will excuse us looking up statistics in order to form an estimate of what the world's output of coal amounts to. Certainly it is more than 2,571 tons, which is the amount of coal the new company proposes to save, expressed in the larger and more compact unit of weight.

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THE GATE TOWER, ST. AUGUSTINE'S COLLEGE, CANTERBURY.

At the recent meeting of the Kent Archæological Society an interesting report by Dr. Maclean, the Warden of the College, was read, detailing the method of dealing with this valuable but rather dilapidated relic of Edwardian architecture which has been adopted by Mr. Herbert Carpenter in the repair and partial restoration which has been necessary. This report is of interest both in regard to the method of dealing with the work, and also in the additional light it throws on the curiously careless manner in which the practical question of constructive security was often neglected by Mediæval architects.

In regard to the peculiar design of the angle turrets of the gateway it is observed in the report—

> "Usually the turrets of gateway towers, as can be seen in the case of the 'Cemetery Gateway,' were continued of the same diameter up to their parapets. But it is probable that this Abbot, or his architect, felt that the turrets of the great Gate-tower would not thus be sufficiently important and dignified. By using, therefore, the full projection of the main cornice of the structure, which is continued round the turrets, they were able to increase the diameter, and therefore the height, of these important features, and thus gain the desired effect, although the overhanging and "top heavy" appearance of this upper story is not altogether satisfactory.
>
> At the same time, there is reason to believe that the parapet on the west side of the Gatehouse itself was of necessity raised and adapted to the altered turrets, by the introduction of the rich triangular tracery between them, above which were then re-erected the battlements and rich parapet work of Abbot de Fyndon, adapted by cutting at each end, so as to accommodate the battlements to the wider turrets.
>
> The whole of this parapet and tracery work is very rich and refined in its details, which are of the type peculiar to Kent and Eastern Sussex, while on the central battlements there yet remains the lower part of the figure of S. Augustine, represented as sitting on its moulded coping.
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> The upper parts of the turrets, though beautiful in design, yet, as examples of good masonry, fall short of Abbot de Fyndon's work. For, as there was some risk in overhanging this lofty superstructure beyond its base, all possible care in bonding the masonry should have been used by the builders, but, on examination, the bonding was found in places to be seriously defective; so much so, that it was evident that while the work was in course of building, the vibration of the wind, and the consequent swaying of the mass, had dislocated the masonry, and opened some of the joints, which, therefore, had been filled in with thin *slices* of stone. Moreover, it seemed, too, as if at the close of the works some inferior stone had been used, mixed with the other, which is of an exceedingly hard texture. It is probably Aubigny, or from a bed of Caen stone long since worked out.
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> To this want of care the dilapidation of the turrets was mainly due, and on examination the decay of the stone was found to be very unequal, for while much of the hard stone is almost perfect, very much of the soft stone had perished, from 1 in. to nearly 3 in. inwards, while the projecting mouldings had crumbled away, or were but slightly attached to the mass behind.
>
> It will be remembered that the general effect of age on these turrets, and on the upper part of the gateway was due to the dark, and, in some places, black appearance of the stonework, with here and there grey and almost white portions. It was found, however, that this darkened stone was the result of the decay and flaking off of the surface, and the induration of the flakes with modern coal soot crumbling at the least touch into powder, while the grey tone was the original surface of the ancient stones, many of which are as sound as when first erected.
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> Various portions of the mouldings having thus become separated, fell to the ground, and after some severe gales it was found much damage had been done. The College therefore instructed Mr. R. Herbert Carpenter (of the firm of Messrs. Carpenter & Ingelow) to make a careful inspection from scaffolding erected for the purpose of enabling him to note each stone.
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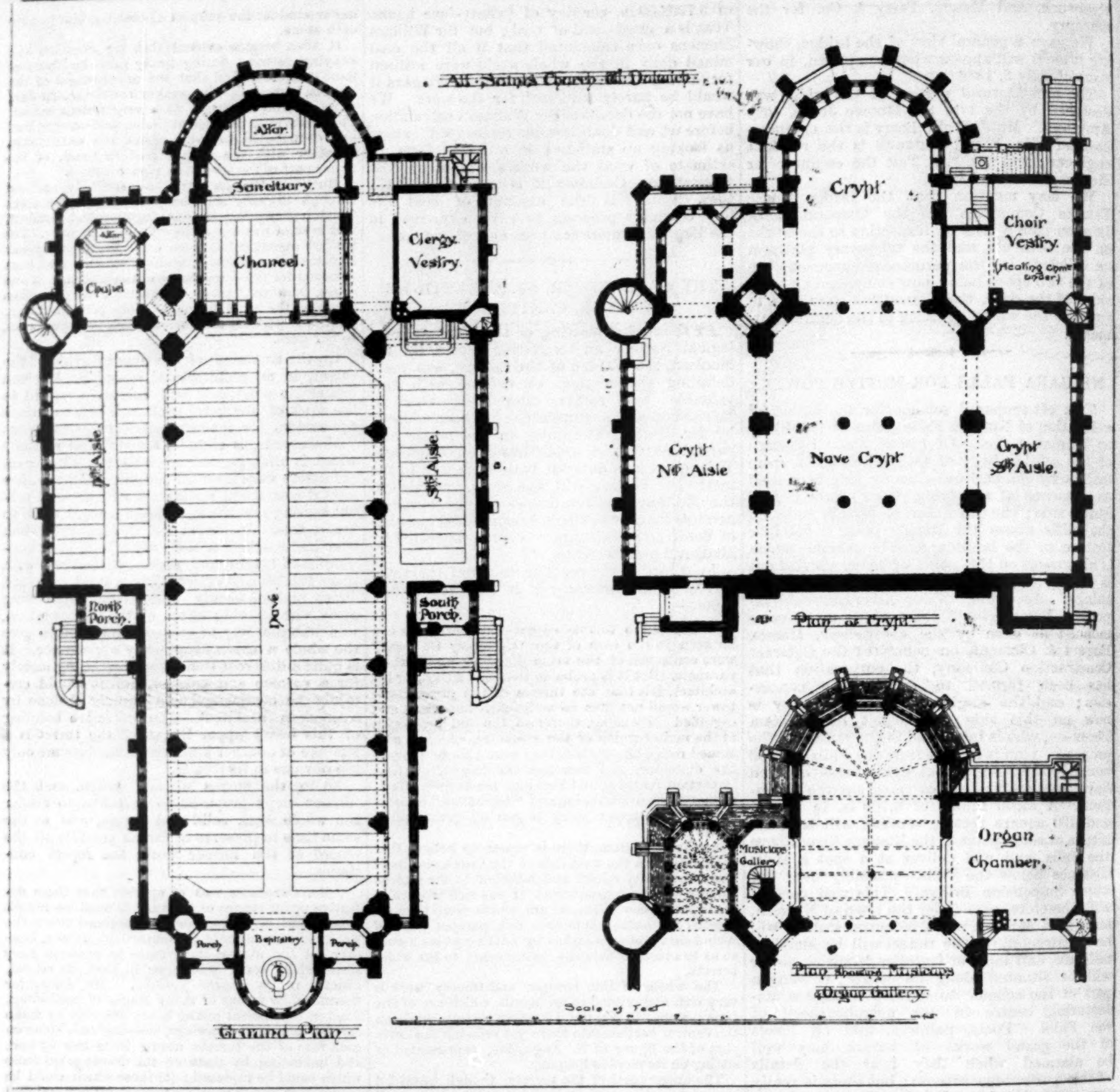
> It then became evident that the vibration and swaying forward during heavy gales had become most dangerous, and that the upper stages of the turrets, especially the weaker north-western one, were inclining outwards to a very serious extent. The removal of the ancient timber lead-covered roof had contributed to bring about the settlements, together with the use, in modern times, of the upper part of the turrets as pigeon houses.
>
> Much of the masonry had seriously suffered through neglect, and many of the upper steps which had tied the structure together had perished, and in some instances altogether broken away. The window openings had been originally filled by oak shutters hung to iron staples; but they had been removed for the convenience of the pigeons; in one sense, however, most fortunately, for by thus allowing the wind to pass freely through them, the upper parts of the turrets have been preserved to our time."

On the treatment of the upper portion of the turret, in an architectural sense, Dr. Maclean makes no comment; and indeed in regard to the work of Mediæval architects it is too much the custom for modern critics to assume that "whatever is, is right"; a reverential attitude which is often carried much too far. Mediæval architects were after all mortal, and like other mortal men made mistakes at times; and it is not serving the cause of architectural truth to ignore this. To corbel out these turrets when they had reached a little above half their contemplated height, and then continue them with these thicker proportions has a most awkward effect architecturally, and so far from doing away with the thin effect of the lower portion, was just the way to exaggerate it, and to give the whole a clumsy top-heavy appearance. It is quite a different thing from corbelling merely for a cornice and parapet, and it would certainly be condemned as a blunder if done by a modern architect. The defective bonding of this heavy upper length of the turret is a mistake of another kind which has become only too obvious in its results.

As to the means already taken, and the further steps proposed to be taken to render the whole work solid and secure, and at the same time to preserve as far as possible all the record of the former work, the report continues:—

> "Mr. Carpenter was of opinion that these defective upper stories of the turrets must be rebuilt from the corbelled-out cornice-line; and this is the work recently brought to completion. It was, however, of the utmost importance to preserve *every* stone which could wholly, or in part, be reused, exactly in its *ancient position*. Mr. Carpenter therefore, by means of many stages of scaffolding, fixed in the ancient putlog holes, was able to make careful measured drawings, showing *each* stone on each face of the turrets, noting them one by one, and indicating by tints on the drawings (*a*) those which could be replaced; (*b*) those which could be repaired or pieced; and (*c*) those so utterly perished as to require renewal. These drawings have been followed in carrying out the work; and it is proposed to deposit copies of them, both at the College and in the Library of the Society of Antiquaries at Burlington House, as a part of the collection of drawings of ancient buildings *before* restoration, now being arranged by a committee, of which Mr. Carpenter, F.S.A., is a member.
>
> In the rebuilding it was felt that some better provision than formerly should be made for bonding the whole together, and this most important consideration has been attended to, and is carried out by forming the roof of each turret of a solid slab of Portland stone, built into the surrounding masonry, while a similar slab is built across the hollow circles of the stairs, at the level of the cells of the small openings before alluded to.
>
> It has been a matter for consideration, whether or not these openings should be closed with wooden shutters, as originally intended; but for the present they are left open for the free passage of the wind.
>
> The question as to the best stone to be used was a most important one. It was felt to be injudicious to trust to Caen stone, and it was, moreover, thought that the use of another kind of stone in conjunction with the ancient stone would serve to mark the modern masonry. Weldon stone was suggested, but the delicate sections of some of the mouldings could not be executed in it. It was therefore decided to use the Doulting stone of the 'Chelynch bed' for all the new masonry, backed up with solid brickwork instead of flint, thus also showing the nineteenth-century work."

We learn that it is now proposed also to cut out and repair some of the defective and decayed stones in the parapets and in the lower part of the turret; and each stone has again been noted in the manner before described. This appears to be an example of "restoration" carried out in a very commend-



able spirit. The only point about which we feel in doubt is that we are informed it is the intention to have a new figure of St. Augustine executed in place of the shattered lower portion of the original figure. The latter, as well as other pieces of the ancient work which will have to be cut out, is to be placed in the Coleridge Museum in the crypt of the library. That is a commendable course to take. But we may suggest, as to the proposed new St. Augustine, that no piece of modern-Mediæval carving can possibly harmonise with the old work, or appear otherwise than an intruder. Why not leave the portion of the ancient figure in its place, and put the new one "in the Coleridge Museum?" We should prefer that course of the two.

◆

Illustrations.

ALL SAINTS' CHURCH, WEST DULWICH.

THIS lithograph is from the original sketch design made for the above-named church by Mr. George H. Fellowes Prynne, A.R.I.B.A., London, in 1887, by whom complete and more elaborated designs were made during the following year for the Rev. James Beeby, vicar-designate.

Tenders for the whole work were obtained. The funds being inadequate, it was determined to build the church in sections. The first contract included the foundations at the east end, which were carried out by Messrs. Kynoch & Co., the foundation-stone being laid on All Saints' day, 1888. The second contract includes crypt, chancel, chapel, vestries, north and south transepts, and four out of seven bays of the nave, the flêche and tower being, for want of funds, temporarily cut off at roof level. The present contract is being carried to completion by the firm of Messrs. J. & C. Bowyer, of Upper Norwood, who have undertaken to complete the work by next May. The salient points of the design are as follows:—

The site has a fall of 28 ft. from west to east. The nave floor taking the western level, space is obtained for a spacious crypt for parochial, heating, and other purposes.

The main scheme of the church shows a lofty nave 58 ft. high and 40 ft. wide and 128 ft. in length, divided into seven double arched bays, the piers being built of red brick and stone. Panels for decoration are formed over lower arches, and a clearstory in spandrels above.

Three eastern bays open into the north and south transepts. The chancel and sanctuary are the same height as nave, 28 ft. wide, 44 ft. in length. The altar is placed twelve steps above the nave floor level, and a good effect obtained both externally and internally by seven lofty windows at eastern end. The dividing arch between the chancel and nave is enriched with tracery supported by two slender columns rising from the lower screen. A wrought-iron rood screen is to span the spaces between columns.

The northern transept forms the nave of a chapel, the sanctuary of which is placed on the northern side of the chancel; clergy and choir vestries and organ chamber are placed on the south side of chancel. An ambulatory runs entirely around the east end of chapel and chancel, connecting the northern turret with the vestries. Space is obtained for a musicians' gallery between chancel and chapel, both of which it faces. As the means at the disposal of the architect were wholly inadequate to admit of a tower or spire of large dimensions, he has designed a kind of minaret tower, which, while it is in accordance with the feeling of the design generally, is sufficiently large to admit of a peal of bells. The tower is placed anglewise to the building, the arches at the base by this means forming a double squint for high and chapel altars.

An apsidal baptistery is placed at the west end.

The present portion of the church will accommodate some 950 persons, and, when complete, about 1,400. The church will be heated by Mr. De Ridder.

The present outlay is about £12,500. The design illustrated was exhibited in this year's Royal Academy.

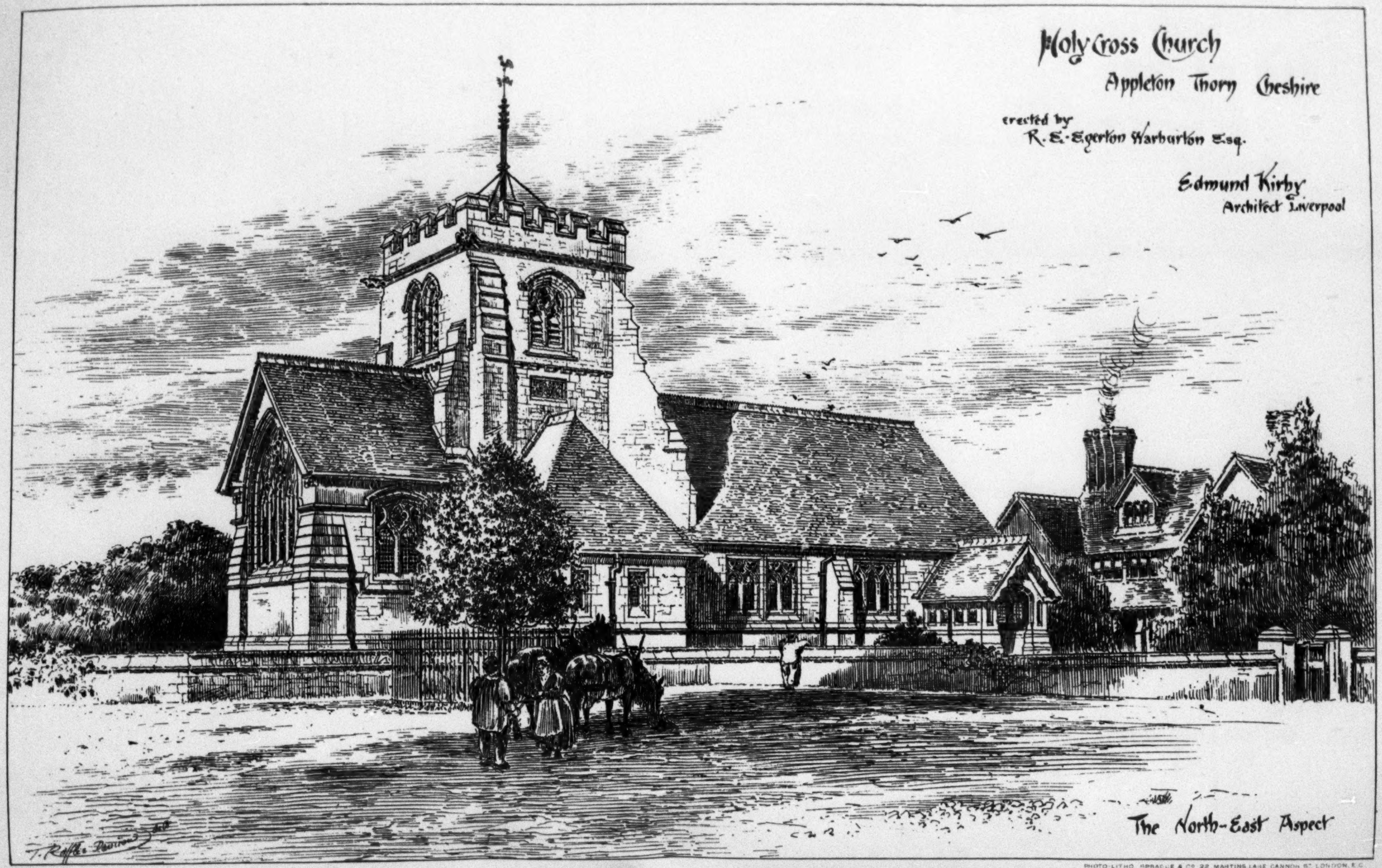
APPLETON THORN CHURCH, CHESHIRE.

The view of this building was exhibited in this year's Royal Academy Exhibition.

It is a country church, about six miles from Warrington, and was erected at the cost of Mr. R. E. Egerton Warburton, of Arley Hall. The plan is that of a small transeptal church with a single aisle to the nave.

The positions of pulpit and tower-stairs give a quaint finish to the east end of the nave, and a baptistery, at its west end, makes a fitting receptacle for the font at the entrance of the church.

The dedication is to St. Cross, which influ-



Holy Cross Church

Appleton Thorn Cheshire

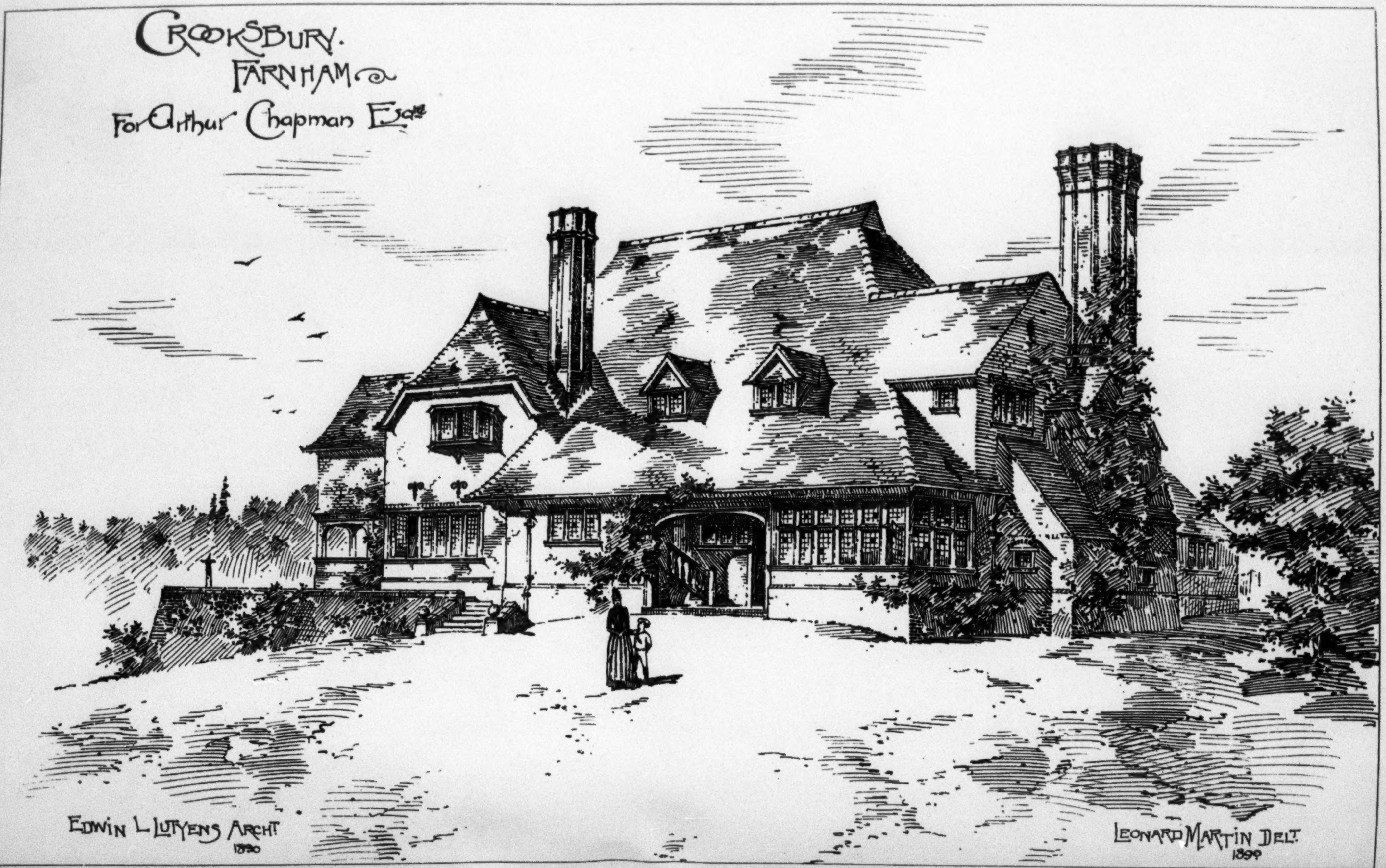
erected by
R. E. Egerton Warburton Esq.

Edmund Kirby
Architect Liverpool

The North-East Aspect

PHOTO-LITHO. SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

Royal Academy Exhibition, 1890.

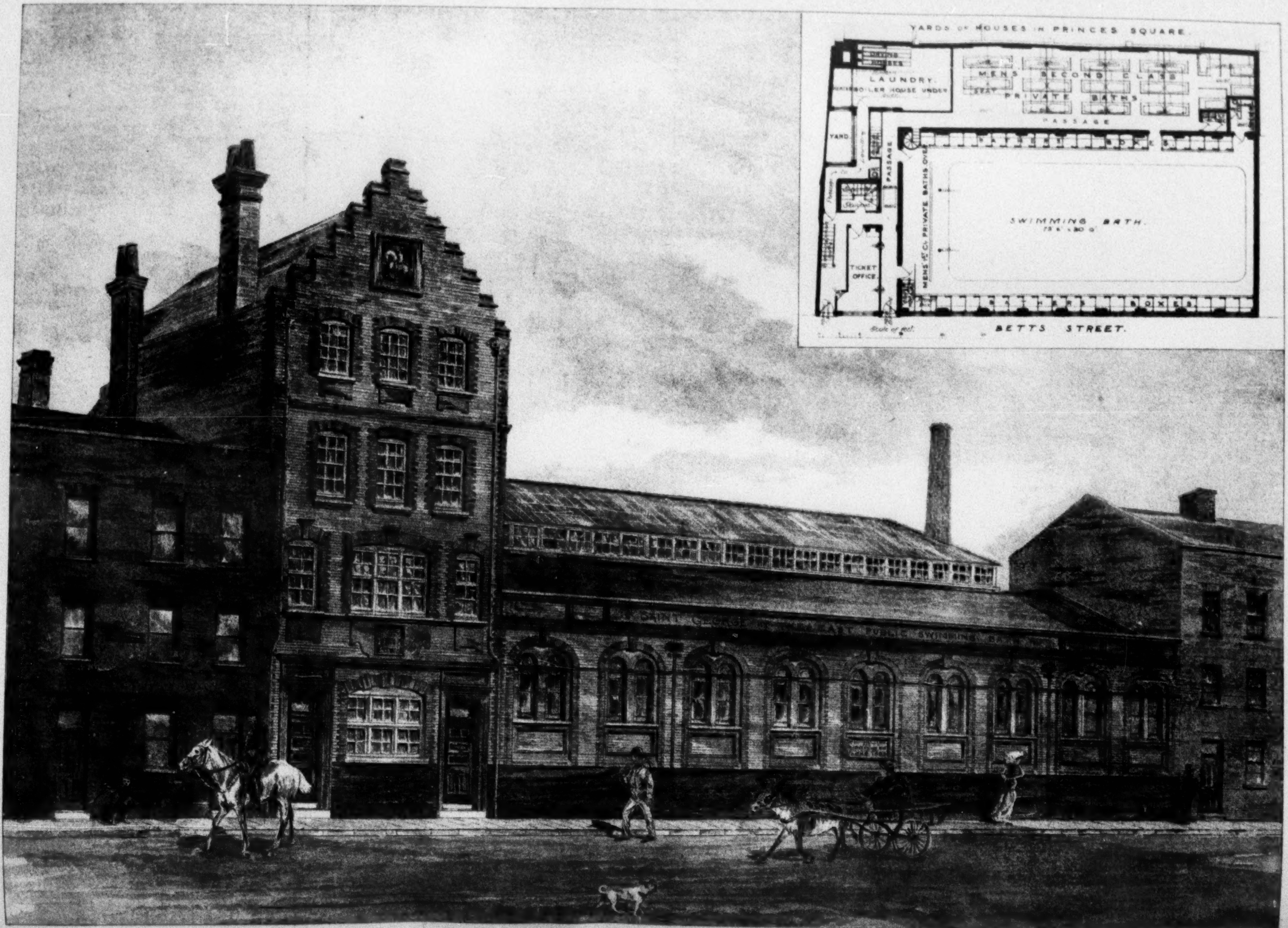


CROOKSBURY.
FARNHAM.
For Arthur Chapman Esq.

EDWIN L LUTYENS ARCHT
1890

LEONARD MARTIN DELT.
1899

PHOTO-LITHO. SPRAGUE & Cº 27 MARTINS LANE CANNON Sᵀ LONDON, E.C


YARDS OF HOUSES IN PRINCES SQUARE.
DRYING HORSES
LAUNDRY.
BOILER HOUSE UNDER
MENS SECOND CLASS PRIVATE BATHS
SEAT
PASSAGE
YARD.
PASSAGE
Stairs
BATHING BOXES
MENS 1ST CL. PRIVATE BATHS OVER
SWIMMING BATH.
75' 6" x 30' 0"
TICKET OFFICE.
BATHING BOXES
Scale of feet.
BETTS STREET.
SAINT GEORGE IN THE EAST PUBLIC SWIMMING BATHS

INK-PHOTO, SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

BATHS, ST. GEORGE'S-IN-THE-EAST.—Mr. Keith D. Young, F.R.I.B.A., Architect.

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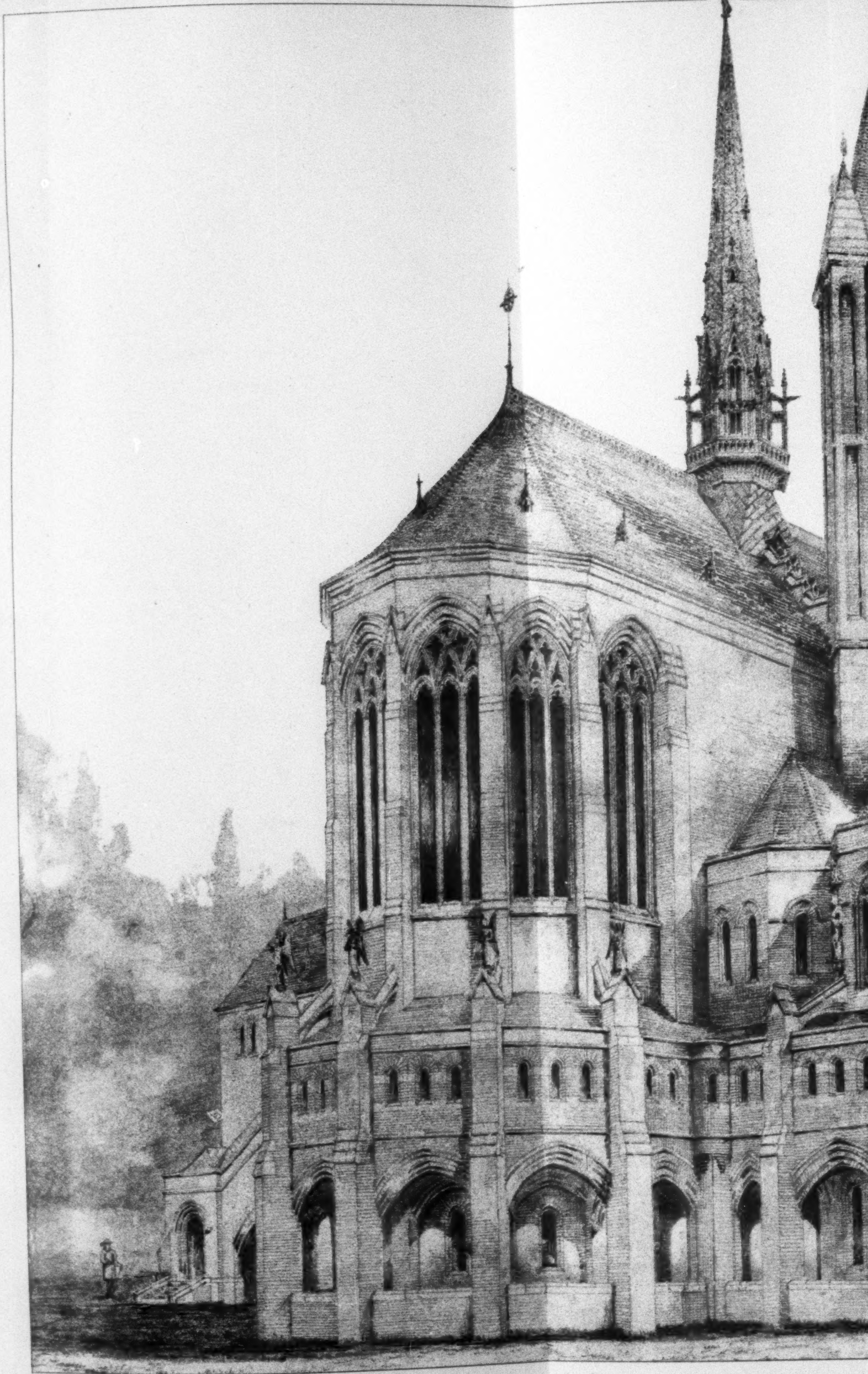
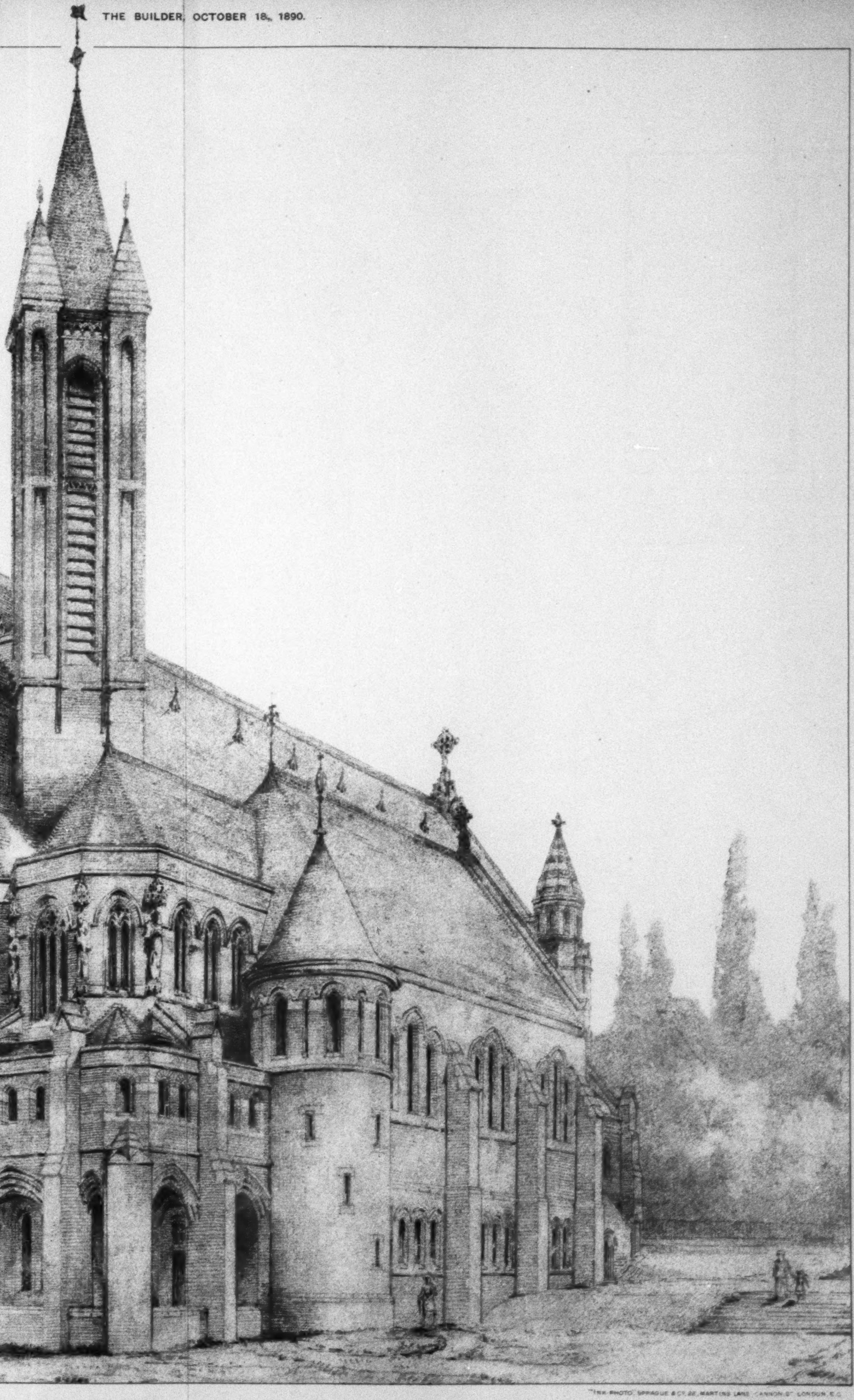
BATHS, ST. GEORGE'S-IN-THE-EAST.—MR. KEITH D. YOUNG, F.R.I.B.A., ARCHITECT.



ALL SAINTS' CHURCH, WEST DULWICH.—MR.

Royal Academy Exhibition, 1890.



"INK-PHOTO" SPRAGUE & Co. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

—Mr. G. H. Fellowes Prynne, A.R.I.B.A., Architect.

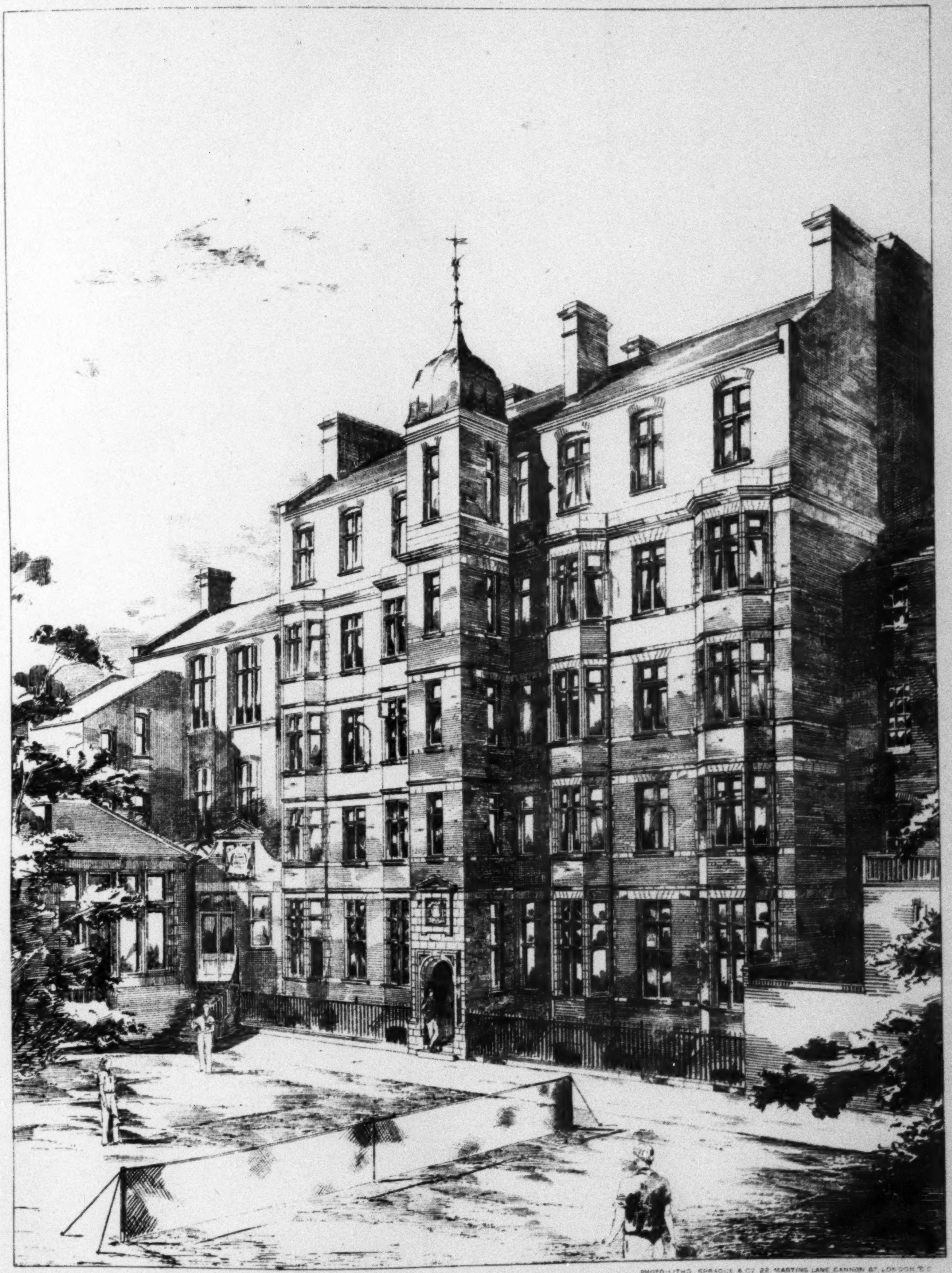
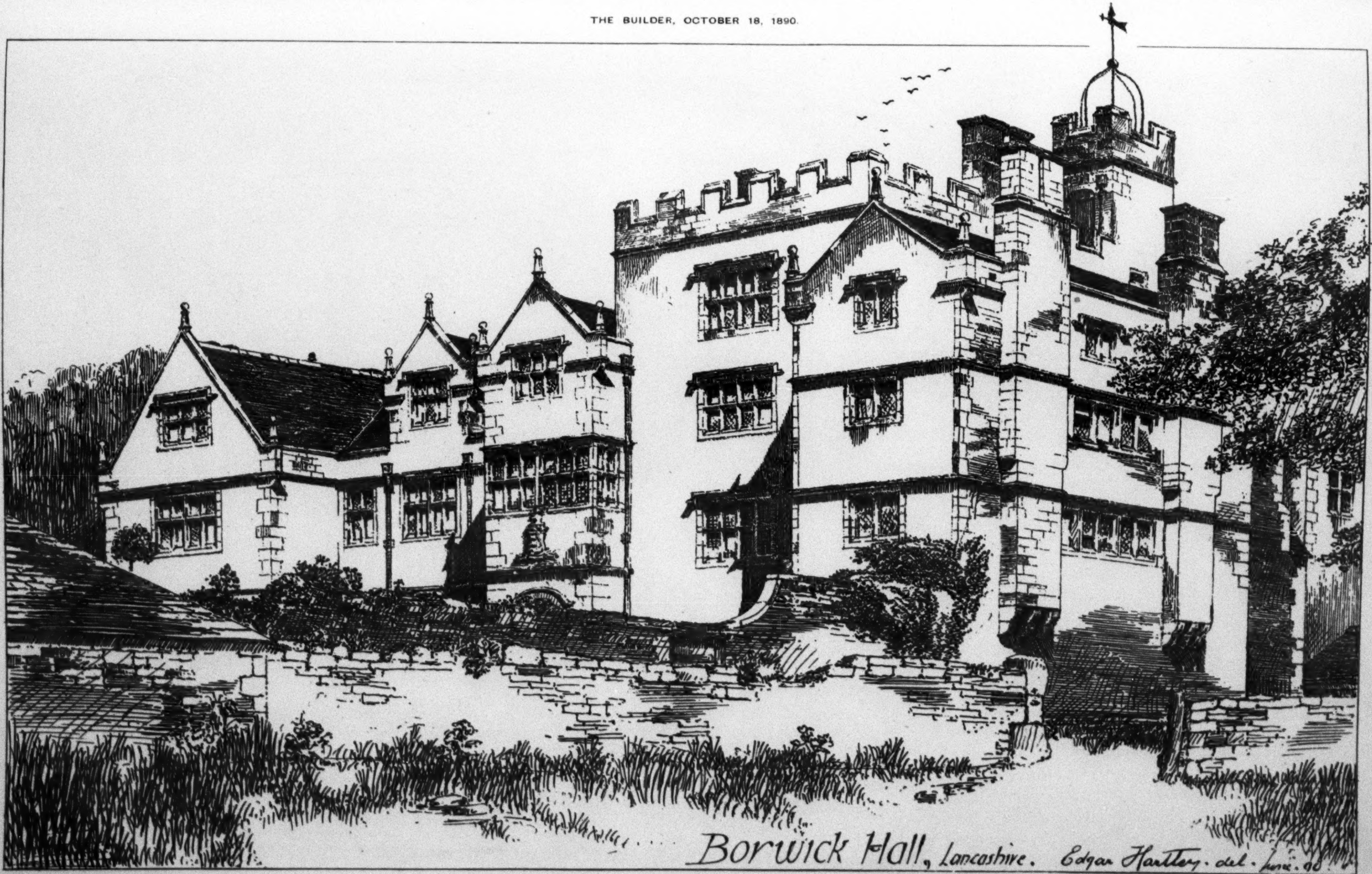


PHOTO-LITHO. SPRAGUE & Cº 22 MARTINS LANE CANNON Sᵀ LONDON, E.C.

ADDITIONS TO MIDDLESEX HOSPITAL.—Mr. Keith D. Young, F.R.I.B.A., & Mr. Henry Hall, F.R.I.B.A., Architects.



Borwick Hall, Lancashire. Edgar Hartley. del. June. 90.

PHOTO-LITHO. SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

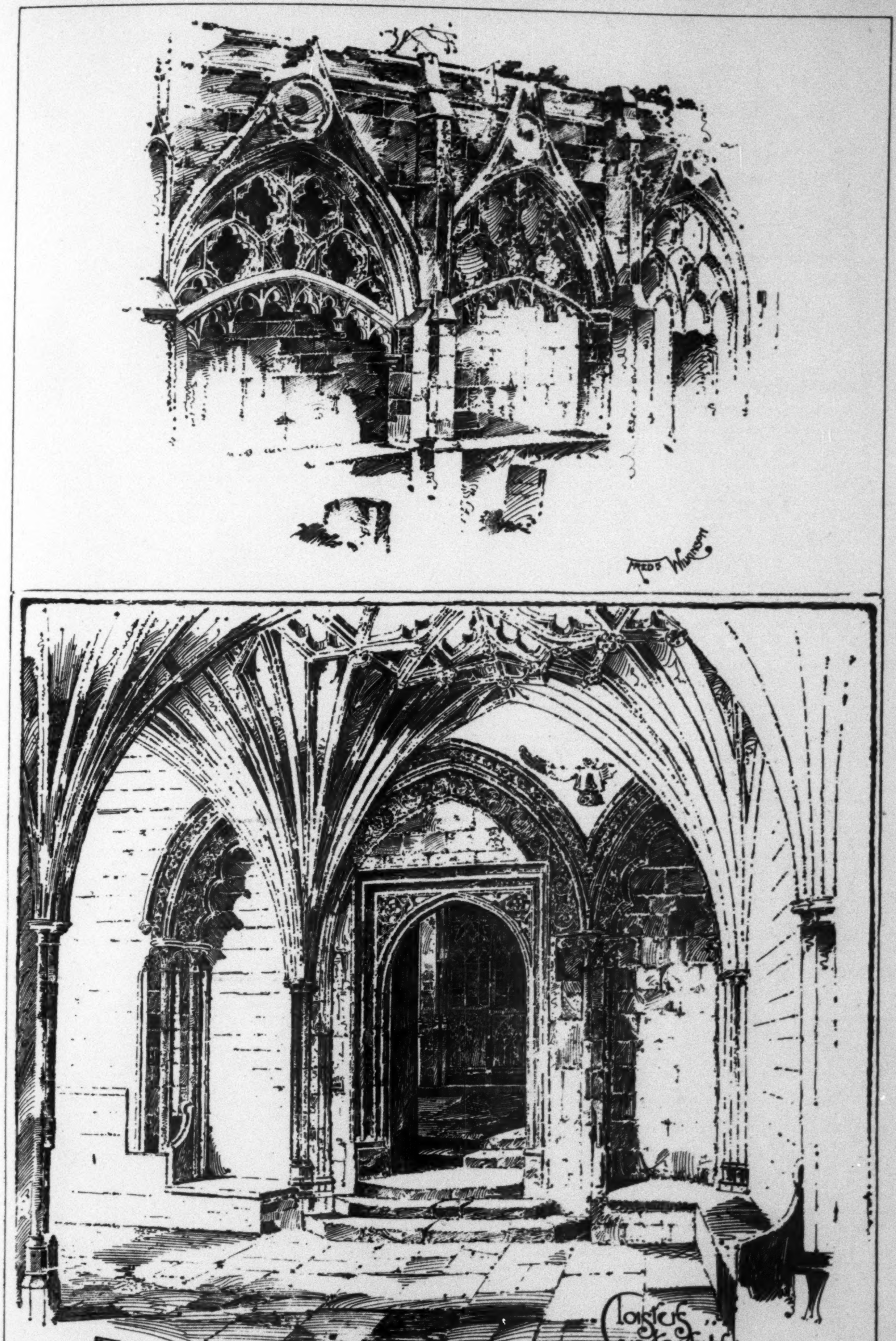

FRED^S WILKINSON
Cloisters Canterbury
FRED. WILKINSON
1890

PHOTO-LITHO. SPRAGUE & Co. 22, MARTINS LANE CANNON St. LONDON, E.C.

CLOISTERS, CANTERBURY CATHEDRAL.—FROM DRAWINGS BY MR. F. WILKINSON.

enced the design in the disposition of the cross-like shape of the plan.

Care has been exercised in laying out the churchyard, and due regard paid to the proper disposal of its drainage before any interments took place.

Besides the church, the donor has added to it a commodious vicarage, with outbuildings.

The contractor was Mr. William Winnard, of Wigan. Mr. T. C. Edwards's roofing, and Messrs. Maw & Co.'s flooring tiles, were used. Mr. John Grundy supplied the heating apparatus. The architect is Mr. Edmund Kirby, F.R.I.B.A., Liverpool.

CLOISTERS, CANTERBURY CATHEDRAL.

At the end of the fourteenth century, the nave and cloisters of Canterbury Cathedral were rebuilt from the designs of Prior Chillenden. Of the cloister, we give two sketches by Mr. F. Wilkinson. The smaller sketch shows a portion of the East Walk, and the larger one the door at the south-east angle of the cloister, which is the principal entrance from the church (from the west wall of the north transept, or Transept of the Martyrdom, as it is sometimes called). Architecturally, it is an interesting example, of which so many exist, of additions made in the Perpendicular times, grafted on the Old Norman and Early English walls, and designed without any regard for the earlier work. The vaulting, very elaborate and beautiful of its kind, partially hides the arches of the earlier arcade and doorway, and even at the cost of reduction in the size of the doorway, the earlier arch has been filled in round the square-headed doorway of later times. This doorway derives additional interest historically, as standing on the site, and, perhaps, built into the wall, of the structure which witnessed the murder of Becket in 1170, and through which he passed on his flight from the palace to the church.

CROOKSBURY, FARNHAM.

This house is now being erected on the south side of Crooksbury, near Farnham, from the designs of Mr. Edwin L. Lutyens. It is intended as a summer residence, and is built of red brick with old tiles on roof and for the tilehanging. The house is planned following the natural levels of the site. There are nine bedrooms, and bath-room, &c., on first floor. There are attics in the roof, lighted by dormers on the north side. The floors in hall and living-room are wood-block with red brick margins.

Messrs. Mitchen Bros., builders, of Shalford, are the contractors.

The drawing from which the illustration is taken was exhibited in this year's Royal Academy.

BORWICK HALL, LANCASHIRE.

Borwick Hall, situate about three miles from Carnforth, was built by the Bindloss family in the year 1559. The various wings and apartments seem to have been added on three sides of an older "Peel," or fortified tower, the walls of the latter being of immense thickness. Among other "Peels" in this neighbourhood, more or less ruinous, are Arnside and Wraysholme Towers, the latter of perpendicular date, and once in possession of the Harrington family. [There is a fine but mutilated tomb and canopy in Cartmel Priory Church to the memory of Sir John Harrington.]

One floor of the original Peel at Borwick was used as the chapel, two sides of which were decorated with tapestry previous to the Hall passing out of the hands of the Strickland family, of Sizergh Castle, to whom it descended by marriage. Adjoining the chapel is the priests'-room, under the floor of which was a "priest-hole," access to which was gained by a trap in the floor. Through alterations to some flues this is now made up.

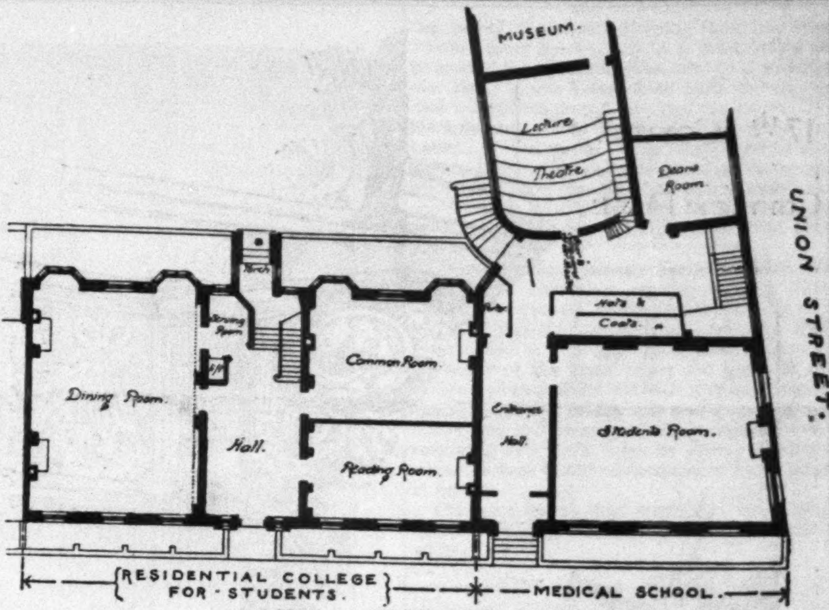
Some good oak panelling remains in the great hall and other rooms.

The archway through the gate-house still shows the masons' marks, indicating the order in which the stones were to be set.

The face of nearly all the external walls is rough cast, which finishes in a line a few inches from external angles and openings, showing the joints of quoins and dressings.

The back wing of this picturesque pile and the gate-house are the only portions now inhabited.

E. Hartley.



Additions to Middlesex Hospital.

NEW BATHS, ST. GEORGE'S-IN-THE-EAST.

These baths were erected, and presented as a free gift to the parish, through the instrumentality of the Rector and private friends. They comprise a swimming-bath, 73 ft. by 30 ft., and forty-three private or slipper baths, a wash-house for towels, &c., and a residence for the superintendent.

The builder's work was carried out by Mr. S. J. Jerrard, of Lewisham, and the engineer's work by Messrs. Slater & Co., of 251, Holborn, from the designs of Mr. Keith D. Young.

NEW BUILDINGS, MIDDLESEX HOSPITAL.

The additions recently made to the hospital buildings comprise a home for trained nurses, a residential college for students, and additions to the medical school. In the perspective view only the two latter are shown.

The garden front of the college, which forms the central feature in the view, is faced with red brick and terra-cotta from the Burmantofts Co., Leeds. Accommodation is provided for thirty-three students.

The new school buildings comprise a luncheon room in the basement, with lavatory accommodation, common room for students, Dean's room, and small lecture theatre on ground-floor; library on first floor, and physiological class-room and laboratory on second floor. The whole of the buildings were carried out by Messrs. Holland & Hannen, from the designs of Mr. Keith D. Young (hon. architect to the hospital) and Mr. Henry Hall.

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INFLUENCE OF EXTERNAL CONDITIONS ON ARCHITECTURE.

This formed the main subject of the first of a series of lectures on the History of Architecture, delivered at the Heriot-Watt College at Edinburgh on Monday last, by Mr. G. S. Aitken. The following is a brief outline of the main points of the lecture:—

The lecturer referred to the various possible sources of the origin of architecture, such as the *tent*, the *cave*, and the *burial-place*, and mentioned seven conditions which had determined its various forms. These were: 1. Climate; 2. Scenery; 3. Location; 4. Material; 5. Tools; 6. Race; 7. Religion.

"A country may have the most genial climate upon earth, but if it be such that the land brings forth spontaneously, and people have only to sit under their vine and fig-tree, the ripe fruit dropping into their mouth, so to say, the mental faculties will in such too favourable circumstances remain languid; with no inducement to physical exertion there will be little or no art culture. It is quite true, on the other hand, that the labour required to maintain a race may be so excessive as to crush out all liking for art. We do not expect to find it fostered in the sweating dens of any of our great cities,—indeed, we hardly look for it where toil is more moderate in its demands, as in the instance in Gray's elegy of the "Ploughman homeward plodding his weary way." Mental exertion is not possible to the physically weary man. If he wishes to find satisfaction in art, it must be through the medium of others, who may be able to act as interpreters to him. All other things being equal, an equable climate is most conducive to the progress of art. Labour under propitious skies is necessarily less arduous for the body than toil in fitful climes. Man under such conditions has a due amount of leisure for art pursuits, and is physically in a condition to follow them with pleasure.

But what if he have no stimulus to mental activity from the scenery around him? Suppose the country to be as flat as a plain or as dreary as a desert. Though the climate be agreeable, yet if the scenery be unimpressive, we cannot expect to find in such a region the highest developments in architecture. It may be good, but at the same time unimaginative and ponderous.

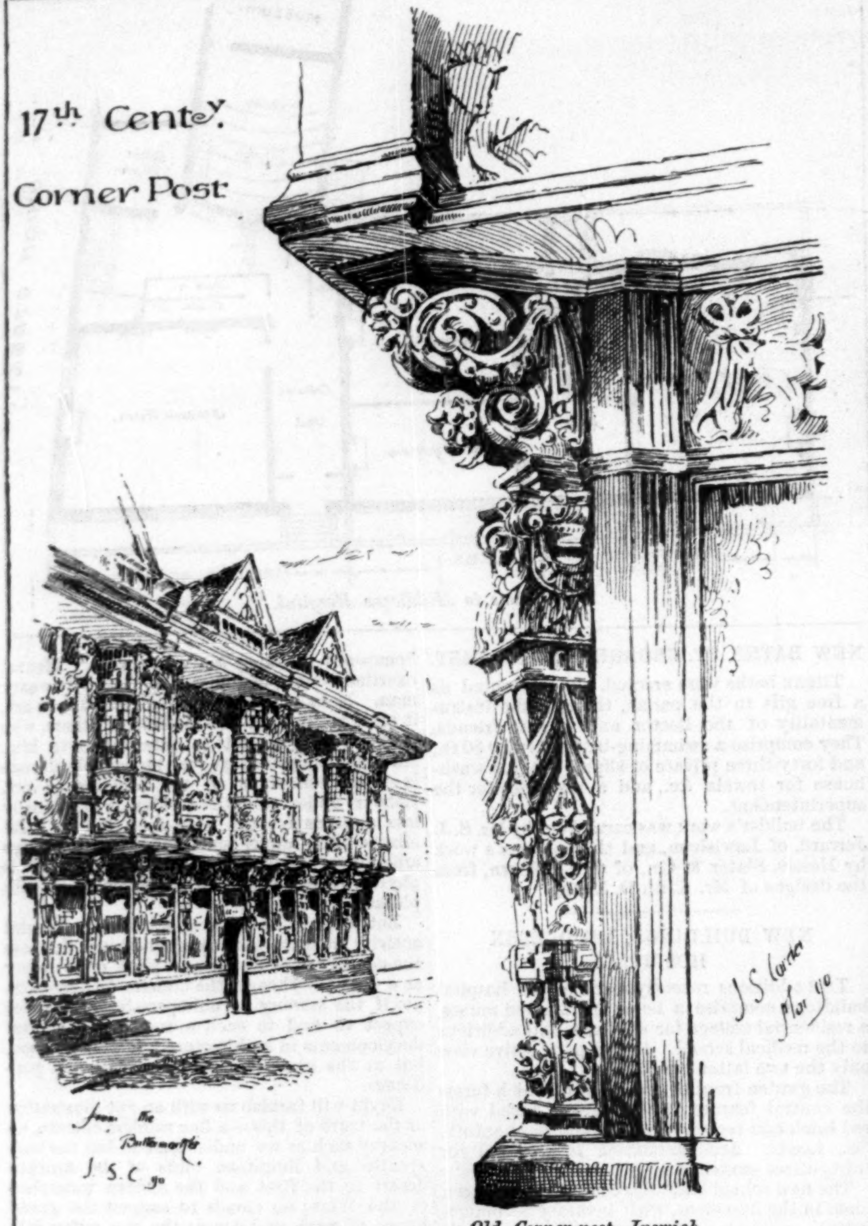
Egypt will furnish us with an apt illustration of the truth of this,—a fine rainless climate, no scenery such as we understand it, but the bare syenite and limestone cliffs of the Arabian desert to the East and the African watershed to the West; no clouds to suggest the grand forms of peak and dome; the sun rising into the intense cloudless blue, and setting as he rose in a ruddy haze which makes him like a ball of fire. What is there in these physical conditions to produce the highest forms of art?

A third element is *Location*. A centre of civilisation may be in the heart of an inland country, its influence not extending beyond that country; or it may be on the sea-coast, where by maritime intercourse it may be in touch with many lands. In the one case, the art resulting may be expected to be essentially provincial; in the other, generous and eclectic, displaying variety, energy, and character. As illustrating this, Indian architecture, as it was before the irruption of Islam, may be taken. Gorgeous and laboured, it is an exotic in art, which could thrive in no other land, because there is nothing within it with which the people of any other country can feel sympathy.

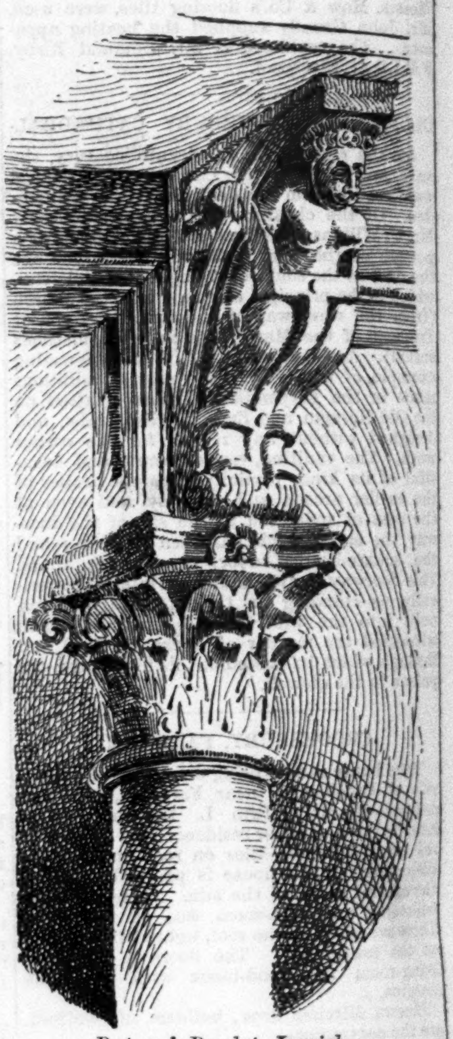
How different with the lands on the northern shores of the Mediterranean. Take which country on that coast we may, there is always something in its architecture which can bear transplanting to other lands, because its roots are down in the soil of common principle, and in this way its foliage may, in a figure, be said to be for the art healing of the nations.

Material is the next matter we take into account. We can imagine the Desert of Sahara becoming by irrigation fertile enough for occupation, but we cannot see what prospect of building there could be even if the dwellers there had all the ambition and energy of a Nimrod. Tent-dwellers they must perforce be, for in so tropical a clime, and without a "boundless contiguity of shade," they could not afford to lose a single palm-tree to help in erecting so much as a solitary hut.

We see how much material had to do in the development of Pointed architecture. If it had been a style depending upon large cubes of



Old Corner-post, Ipswich.



Post and Bracket, Ipswich.

stone it would soon have reached the end of its journey, but as the principles of its construction permit, indeed, encourage, the use of blocks of moderate size, its progress was assured wherever stone and brick were available.

An abundance of *material* without *tools* to shape and weld it would avail nothing for the formation of a style of architecture. For just as the invention of type printing has developed literature so the invention of tools has loosened the bonds of the genius of architecture. With hammer and chisel the mason can make the rough stone shapely, can revel in all the intricacies of moulded work, forming here a mystic hollow and there a living line of light, he can garnish a frieze with a reminiscence of the flowers he saw in some woodland nook or on mountain side; or he can crown the shaft with the semblance of leaf and flower with "lithic" birds embowered herein. All this and much else can be done because of tools.

A more important and determining factor in architecture is that of *race*. But who can explain how it is that the art of one race shall be of a higher type than that of another, that the works of the Greeks should stand head and shoulders above, say, the art of the Hebrew race? An attempt to solve this would be like an effort to discover the principle of life in plant or man.

Our seventh formative condition is *Religion*. Turn to what land we may, and survey in imagination its architectural works, its religious buildings occupy the first place, whether in point of scale, dignity, or elaboration, so that it may truly be said that the history of architecture is mainly the history of the shrines of religion.

And we find the noblest works of this department of art associated with those forms of religion which are the most spiritual. The Greek temple is a masterpiece of intellect, but it clings to the earth, and is, as its horizontal lines suggest, of the earth—earthy; on the other hand, the Mediæval cathedral soars heavenward, as if it would claim kindred with worlds beyond, and is undoubtedly the realisation of all that goes to make truly good architecture."

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OLD CORNER-POSTS, IPSWICH.

THE adjoining sketches of two of the numerous quaint features of this kind to be found in Ipswich are taken from a book of illustrations of them by Mr. J. S. Corder, of which some notice will be found under the heading of "Books," in another column. The drawings are considerably reduced in size from the originals.

◆

THE PRIOR'S DOOR, ELY.

THE Prior's Door, on the south side of Ely Cathedral, is well known as one of the richest and most elaborate of the many rich and elaborate doors of similar date which are to be found scattered about in various parts of this country. The work belongs to the latter part of the twelfth century, and, as was usual at this period, the whole doorway is overlaid with a wealth of ornament which was not surpassed at any later time. The carvings are in a very fair state of preservation, except, perhaps, close to the ground-level, where they are partly obliterated; they represent in the tympanum our Lord in glory, with attendant angels, the shafts and piers being covered with grotesque figures, including the signs of the Zodiac.

The jointing is noteworthy, more especially in the outer arch, and the method in which the design of the tympanum sculptures has been arranged to work in harmoniously with the stones and their joints is interesting. Seen by the light of the afternoon sun, this doorway is a very beautiful object.

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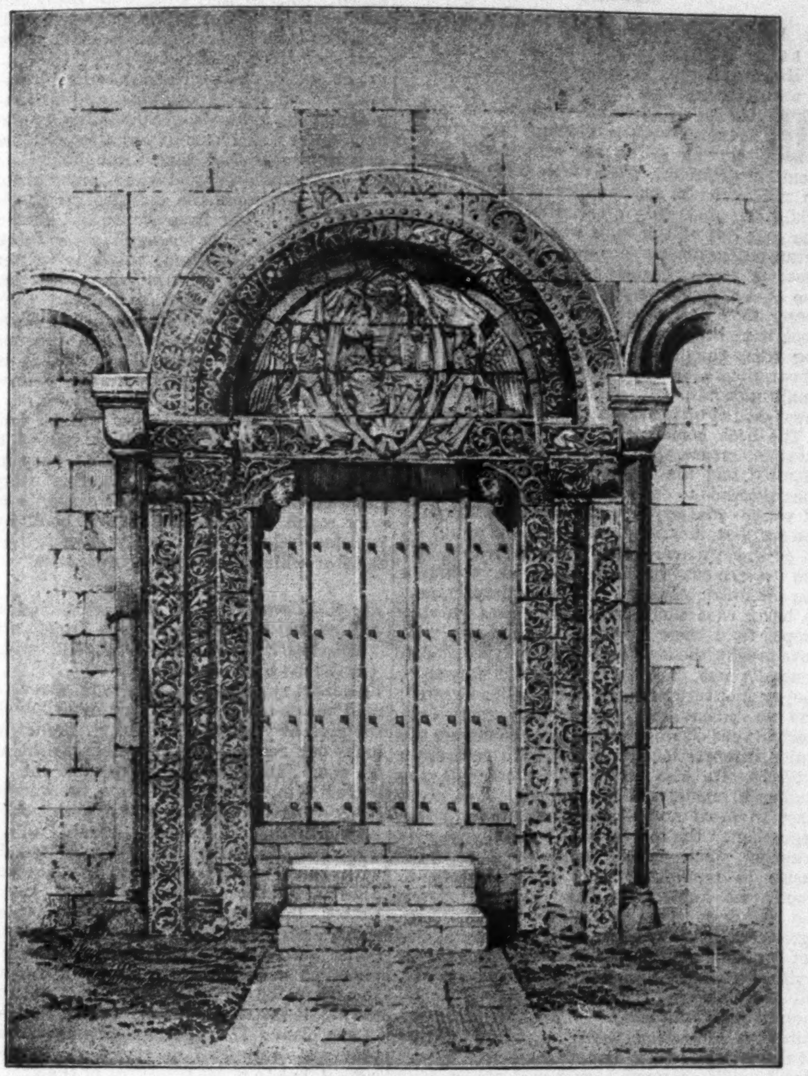
THE LONDON COUNTY COUNCIL.

THE ordinary weekly meeting of the London County Council was held on Tuesday afternoon last at Spring-gardens, the Chairman, Sir John Lubbock, presiding.

Jobbing Contracts.—The Standing Committee brought up the following report, dated October 8:—

"In a report that was before the Council on April 22 last, we recommended that with a view to avoiding the possibility of error in the settlement of the accounts under jobbing contracts, the measurements of work done should be made by the contractor and checked by the officials of the Council. A suggestion, however, having been made that there might be an improved arrangement with respect to contracts generally, the matter was referred back to us for reconsideration. We have now to report the result of our further deliberations, in which we have been aided by a sub-committee composed of some of our own members, with the addition of Col. Edis and Mr. Brereton, whose professional knowledge and experience enabled them to offer valuable suggestions. Having considered the report of the sub-committee in conference with the Chief Engineer and the Architect of the



The Prior's Door, Ely.

Council, we have arrived at certain conclusions which we now submit to the Council, and which, if adopted, we believe will be productive of considerable economy in the carrying out of the Council's works. Before stating them, however, we may mention that it appeared to us in the course of our investigation that some of the works hitherto done under the jobbing contracts might be carried out more economically if tenders were obtained for them. This being the case, we are of opinion that, whenever practicable, tenders should be obtained. In the recommendations which we now make it will be observed that we distinguish between the Engineer's and the Architect's departments, as regards the course to be followed with large contracts, the different circumstances of the two cases appearing to require a different procedure. Our recommendations are:—

'(*a*) That a quantity surveyor be employed by the Council (whenever required) to prepare bills of quantities for all large works, the Council accepting the responsibility for such bills of quantities.

(*b*) That copies of the bills of quantities be supplied, with the specifications, drawings, &c., to persons who wish to tender, and that each person be invited to tender on the bills of quantities thus supplied.

(*c*) That, in the case of large works carried out under the direction of the Chief Engineer, the measurements be made as the work proceeds by an assistant in his department, who should be placed in direct charge of the works in progress, and that the payments to the contractor for the amount of work executed be calculated according to the prices in the bills.

(*d*) That, as regards the smaller works carried out under the direction of the Chief Engineer, a measuring surveyor having experience in civil engineering work be appointed in the first class at the commencing salary of 200*l*. a year, and that he be required to abstract and bill his own measurements.

(*e*) That, in the case of works carried out under the direction of the Architect for which bills of quantities have been prepared, the extras and omissions be measured by the surveyor who has taken out the quantities, and valued by him in accordance with the priced and signed bills of quantities.

(*f*) That for all other works in the Architect's and Valuer's departments the following appointments be made under the Architect, viz.,—

A measuring surveyor in the first-class at the commencing salary of 200*l*. a year.

A clerk for abstracting and billing dimensions in the third class at the commencing salary of 100*l*. a year.

(*g*) That, whenever practicable, instead of having works executed under the jobbing contracts, tenders be obtained.'

We may add that, if the Council adopts our first recommendation for the appointment of a quantity surveyor, we propose to invite by public advertisement applications for the appointment."

The report and its recommendations were agreed to without discussion.

Vauxhall-bridge.—The Bridges Committee reported that they had given consideration to a petition which had been received from the Vestry of Lambeth praying that Vauxhall-bridge might be superseded by a modern structure. The Committee, after hearing a deputation in support of the petition, had come to the conclusion that, although the bridge was narrow, the gradient steep, and the number of piers tended to obstruct the river traffic, the matter was not urgent, and might be delayed till the other works which the Council had in hand had been completed, and they recommended that the Lambeth Vestry should be so informed.

Mr. Myer moved that the matter be referred back to the Committee for further consideration, on the ground that the matter was of real urgency. He said that the Engineer of the Council had reported that, with regard to some of the piers of the bridge, viz., Nos. 3, 4, and 5 from the Middlesex end, it had been found that the bed of the river adjoining them had been scoured away by the tide to a level below the bottom of the timber cradles, and in the case of pier No. 3 it was ascertained that the current had actually undercut the pier for several feet inwards, and to a depth of 9 in. below the bottom of the cradle. The Engineer had also reported that the ebb-tide passing under the bridge had been calculated to flow through the central arch with a velocity of 7½ miles per hour, and had been a fruitful source of accidents.

The amendment having been seconded, Mr. Osborn, the Chairman of the Bridges Committee, said that the Committee were fully cognisant of the Engineer's report, but Mr. Myer had omitted to state that the hollows caused by the scour of the river under the piers of the bridge had been filled up with slag and cement concrete, and the bridge was now in a safe condition, and the question of its rebuilding could very well wait until three or four years later, when the work would no doubt have to be taken in hand.

The amendment was negatived by a large majority, and the report of the Committee was adopted.

The Sewage Question.—The Main Drainage Committee brought up a report recommending that the tender of Messrs. Schlesinger, Davis, & Co., amounting to 28,000*l*., for the construction of a new sludge-ship, be accepted.

Mr. Æneas Smith moved that the matter be referred back to the Committee, on the ground that the Council would not be justified in making such an expenditure until the report of Sir Benjamin Baker, who had been paid 500 guineas to advise them in conjunction with their Chief Engineer on the whole subject, had been received.

Mr. Lidgett seconded, and Mr. McDougall and Mr. Benn supported the amendment.

On the other side, Mr. Burns urged that whatever the recommendations of Sir Benjamin Baker might be, it would be impossible to carry them out in less than four or five years, and they must continue their efforts to keep the river as clean as possible in the meantime.

Mr. Arthur Arnold, the Chairman of the Committee, said the vessel would be required because it would be almost criminal not to utilise to the utmost extent the works at Crossness, on which three-quarters of a million sterling had been spent, and which would come into operation about the beginning of July next.

On a division, the recommendation of the Committee was approved by a large majority.

Sky-Signs.—The Building Act Committee reported that their attention had been called to the erection of "sky-signs" upon various premises in the metropolis without the licence of the Council having been either applied for or obtained. As the Committee considered the erection of "sky-signs" most objectionable and dangerous, they recommended that the Solicitor be instructed to take the necessary proceedings in a test case.

As an amendment to the recommendation of the Committee, Mr. Beachcroft moved, "That it be referred back to the Committee to frame By-laws for the consideration of the Council either under Section 56 or 57 of the Metropolitan Building Act, 1865, or under the 16th section of the Local Government Act, 1888, as the Solicitor may advise, for the purpose of controlling the structures known as sky-signs." He maintained that by taking a test case to the police-court, where they were pretty sure to fail, they would abandon all the rights they possessed, and as the Council had large powers to frame regulations, rules might be framed which would meet the case.

On the other hand it was argued that if a test case, which could be brought in a police-court at very little expense, proved successful, the Council would be able to deal with the nuisance, and, if successful, they would be in a strong position in going to Parliament to ask for authority over sky-signs.

On a division the recommendation of the Committee was agreed to.

Parks and Open Spaces.—On the recommendation of the Parks and Open Spaces Committee, the necessary steps were taken to complete the purchase of Brockwell-park, Herne-hill. The consideration of proposal to negotiate for the purchase of 74 acres of pine forest adjoining Bostall-heath was adjourned for a week.

Alleged Nuisances from Brick-burning, &c.—The Sanitary and Special Purposes Committee brought up the following report:—

"Our attention has been directed from time to time to the serious nuisances arising from brick-burning, ballast-burning. and kindred trades. These nuisances mainly arise from the evolution of large volumes of offensive effluvia and smoke in the burning of bricks in clamps and in the burning of ballast, and also from the burning of the refuse-matter or soft core which is not suitable for use. On account of the peculiarly offensive nature of the vapours, and the distance to which they are at times carried, the nuisance extends over considerable areas, which are often thickly-populated districts. We are satisfied that the discomfort experienced in London from these sources is more considerable and widespread than perhaps from any other source. The 16th section of the Local Government Act enables the Council to exercise the power given by the 23rd section of the Municipal Corporations Act, 1882, of making by-laws for the good rule and government of the County, and for the prevention and suppression of nuisances not already punishable in a summary manner, and we consider it most desirable that by-laws dealing with the nuisances referred to should be made by the Council under this section without delay. We have prepared and now submit the following by-laws for this purpose—

'By-laws for the prevention of nuisance in brick-burning, ballast-burning, brick-making, tile-making, pipe-making, and the burning of soft core, made in pursuance of Section 16 of the Local Government Act, 1888, and Section 23 of the Municipal Corporations Act, 1882:—

1. Every person who carries on within the county of London any of the following processes,—that is to say, brick-burning, or ballast-burning, or brick-making, or tile-making, or pipe-making, or the burning of soft core, or any other like process, shall cause every such process in which any offensive effluvia, vapours, or gases are generated, to be carried on in such manner that no offensive effluvia, vapours, or gases shall escape into the external atmosphere, and shall cause all such offensive effluvia, vapours, or gases to be effectually arrested or destroyed.

2. Every person who shall offend against the foregoing by-law shall be liable for every such offence to a penalty of five pounds.

Provided nevertheless, that the justices or court before whom any complaint may be made, or any proceedings may be taken in respect of any such offence may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this bye-law.'

We recommend—

'That such by-laws be made, and the necessary steps taken for obtaining the confirmation of the Local Government Board thereto.'"

The report and recommendations were agreed to without discussion, and, after the transaction of other business, the Council adjourned.

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SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

THE opening meeting of the new session of the above Society was held at the Montgomery Hall on Tuesday night, and there was a large attendance of members, including the President (Mr. F. Fowler), Messrs. C. J. Innocent, J. B. Mitchell-Withers, E. M. Gibbs, W. F. Hemsoll, W. H. Lancashire, C. Hadfield, J. F. Wightman, E. Winder, jun., J. Winder, H. W. Lockwood, J. Smith, and others. Letters expressing regret at non-attendance were read from Mr. J. F. Massie (Wakefield) and Mr. T. J. Flockton. The President in his address congratulated the members on keeping up their numbers, and on the fact that the Society had a good balance to its credit. The main object of this Society was to look after the interests of their profession, and to stand by one another. He trusted they would all continue to take an interest in the well-being of the Society, and do their best to enlarge its sphere of usefulness. The proceedings terminated with a vote of thanks to the President.

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GIFT BY LORD DERBY TO THE LIVERPOOL FREE MUSEUM.—It is announced that Lord Derby has just presented to the Liverpool Free Museum a valuable collection of prehistoric implements illustrating the stone and bronze periods of Europe and America. The collection has arrived safely at Liverpool, and is now being prepared for exhibition by Mr. T. J. Moore, the curator of the Free Museum.

Books.

A Manual of Wood-carving. By C. G. LELAND, F.R.L.S., M.A. Revised by JOHN J. HOLTZTAPFFEL. London: Whittaker & Co., and Holtztapffel & Co. 1890.

THIS is an admirable little book, combining artistic feeling for wood-carving as an art with useful practical information. We have occasionally had to notice books on wood-carving in which, while the practical information given as to the handling of the tools was useful and well arranged, the illustrations were in such wretched taste as to be injurious rather than helpful to the student who wished to become anything better than a wood-chopper. In Mr. Leland's book there is not only much good critical teaching from the artistic point of view, but the illustrations are quite above the average of such small manuals, and many of them show a great deal of artistic feeling and fancy.

The book commences, as every such work must commence, with a description of the tools required, and the method of using them, and then proceeds to describe and give illustrations of various classes of work, commencing with the simplest, indenting and stamping, going on to cutting grooves, cutting simple leaves, and the "sweep-cut" or freehand carving, to which the author rightly attaches much importance, as being that which really separates carving proper from mere cutting. "Amateurs who have taught themselves," it is observed, "can generally cut or chip only straightforwards, they cannot turn or carve a leaf with a sweep"; and the student is recommended to practise the freehand cut on waste wood, so as to master the action, before seriously attempting to curve out a subject. He also strongly recommends the student to model a difficult bit of detail, or at least to draw and shade it carefully before beginning: "the reason is this, that having its principal points in the memory, it is much easier to reproduce them when cutting in wood; we know when and where to turn the hand or the tool." We are quite in agreement with the author in his advice not to undercut leaves to the extent of trying to make them look thin and natural, till they are as fragile as paper ("much more fragile," in fact). "This is greatly admired as indicating 'skill,' and it certainly demands skill of a common order to effect. But it requires a much higher and nobler kind of *art* and will to make the leaves strong and firm, even if we conventionalise them, so that their curves are really beautiful." The object in carving foliage being in fact not to imitate it, but to imitate its beauty in such a form as can be best represented in wood.

Many a person will consider the author heretical in saying that polishing and finishing with sandpaper is not necessarily a fault. He should no doubt learn to carve clean and well without glass or sandpaper, "but there is no law why he should go no further." This is a little bit of re-action against the contempt which has been poured of late years upon sand-papered work; but we hope it will not be taken by students as a kind of licence to offend in this way. Another suggestion in the book we do consider decidedly heretical, that of appliqué carving (of an animal in low relief for instance) fixed to a previously-carved diaper ground. No doubt "effects" are to be produced in this way; but they are not legitimate effects, and one always feels a sense of dissatisfaction from the knowledge that the thing is not a solid whole, and is likely to separate some day. Another point we must take exception to is the three-legged stool which forms the tail-piece at the end of the last chapter, and which is vile. It is true, as the author implies, that it is a mistake to carve such stools on the seat, if they are to be used as seats at all, and ornament is better applied on the legs; but to encrust the legs with realistic foliage twining irregularly round them is an utter misapplication of carving, and entirely at variance with the quasi-architectural methods which ought to preside over furniture design. But in the main this is one of the best small books of its kind that we have seen, and should be looked after by those who desire to try their hands at the fascinating art of wood-carving.

Structural Mechanics. By R. M. PARKINSON, A.M.I.C.E. London: George Bell & Sons. 1890. Whittaker & Co.

MR. PARKINSON's little handbook on "Structural Mechanics" is an addition to the literature of a branch of engineering which has already been so ably treated by many eminent men that it is somewhat surprising to find anyone who cares to occupy his time in travelling over such old ground again.

The author deals with the usual subjects—the strength of beams, columns, and arches—explaining the methods of calculating the stresses upon them under various conditions of loading. It is to be regretted that throughout the work the word *strain* is used where *stress* should be written. *Strain* is the deformation or change of shape resulting from *stress*, and should not be used in any other sense. We also think in a handbook of this kind, which is written for practical men, it is a mistake, when dealing with the effects of heat, to measure the temperature by the centigrade rather than the Fahrenheit scale; for, although this may be desirable in some scientific works, it is not likely to be appreciated by the class for which this book is written.

At the end of each chapter will be found a set of examples which cannot fail to be of much service to the student, as they are in most cases questions which occur in every-day practice, and the author has certainly added very much to the value of his book by the judicious selection of these problems, the solutions of which he has given in all cases.

The Old Corner-Posts of Ipswich, with illustrations in photo-lithography from original sketches. By JOHN S. CORDER, architect. Ipswich; S. H. Cowell; 1890.

THE literary portion of this work was an essay read before the Ipswich Fine Art Club during the present year, by Mr. John S. Corder, whose name our readers will remember as the author of some interesting collections of small sketches published from time to time in the *Builder* under the title of "Wayside Notes in East Anglia." The essay consists of a short sketch of the history of Mediæval woodwork, with some remarks on the special features illustrated, the corner-posts of the half-timber houses. These massive posts became necessary where a half-timber house with an overhanging upper story happened to be the corner house of a street, and the oversailing story had to be carried round the angle instead of being merely a projection in one plane. These posts were very massive, as they not only had to carry a considerable weight, but to resist the effect of the accidental collision of any vehicle turning the corner carelessly.

There seems to have been in ancient Ipswich a special love for carving these posts, so as to render them rich and decorative objects. The author has no doubt that in olden times Ipswich abounded with them, but they have all disappeared except nine, and of these the last three figured in the book have been been removed from their original situations and taken away from the town.

The author has done an excellent piece of work, and produced a series of very interesting drawings, in preserving a record of objects so picturesque in themselves, and the life of which is naturally so very precarious. The drawings are large and carefully executed, and the subjects are arranged as nearly as can be judged in order of date. The first is a late fifteenth-century one from the junction of Silent-street and St. Nicolas-street. This is a rich bit of panel and tracery work, but has not the fancy of design or force of execution of some of the others. The five following examples are also late Mediæval, all of the surface tracery style of design except No. 6, which is a plain post with a carving of birds and griffins between two mouldings at the top, with a cresting over: the whole forming a kind of impost for the heavy curved corbel which carries the angle. No. 8 is a seventeenth-century example with a demon figure squatted under the angle and a boldly-carved horizontal cornice over it. No. 9 is a much more ornate example in very florid taste, but interesting as an example of spirited execution; Renaissance ornament executed in the rough manner of a country carver. The plate showing this post, and the highly-picturesque group of houses of which it forms a part, is reproduced to a small scale on page 310. In the extraordinary example from Gooding's coffee house (plate 10) the decorative treatment is carried up through both stories of the house, the oversailing soffit on each story being carried by a grotesque dropsical-looking figure stooping with hands on knees and appearing to carry the soffit on his bent shoulders; each of these figures stands on a pedestal carried on the heads of a group of three figures, the lower group appearing to represent Christian and the upper one pagan personages. This is one of those now removed; a more curious piece of work of its kind could hardly be found, though it is more grotesque than graceful. The thirteenth plate in the collection is a bracket and post from a house in Carr-street, not a corner-post; a demon figure interlaced with strap work, and carried on a column with a rudely-carved Corinthian capital. Of this also we give a reduced facsimile on page 310.

Mr. Corder's thin folio should be of interest to those who like to secure illustrations of ancient carved work before it is removed in the course of the rebuilding which is now invading all our old towns more or less.

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Correspondence.

To the Editor of THE BUILDER.

BAND-SAWS AND OTHER SAWS.

THE following is the translation of a communication received from MM. F. Arbey et Fils, of Paris, in reference to the article by Mr. Worssam on "The Conversion of Timber by Machinery," which appeared in the *Builder* of September 20:—

"SIR,—In reference to the article by Mr. Worssam on the conversion of timber by machinery which appeared recently in the *Builder*, perhaps your readers may be interested in knowing the result of our long experience in regard to one class of machines referred to, those called band-saws.

In the first place large band-saws cannot be utilised except for straight cuts. We wish to call attention to the numerous drawbacks which we have found in our experience, in the employment of this class of saw.

In the first place, the difficulty of sharpening is very great. It is a question of sharpening a long ribbon of steel, sometimes up to fifteen mètres in length.

There are no doubt machines for sharpening them, but it is not easy to get good results by these means. It is in fact impossible mechanically to obtain a perfect and regular set in these long bands, which are often not of the same temper throughout. It is necessary therefore to give or to complete the "set" by hand, and to employ a skilled workman for this purpose.

Another drawback with band-saws, which often escapes the notice even of practical men, is this: to obtain a perfectly straight cut it is necessary to have the saw at the greatest tension it will bear, causing very heavy friction on the pulley bearings, with consequent loss of some of the power expended in driving the saw. If the saw is not in sufficient tension, what happens? It deviates a little from the straight line, and at once begins to heat from friction in the working, and with this heating the blade sensibly lengthens.

These saws being very thin, frequently break; it is then necessary to solder them, perhaps in two or three places. Each of these points causes a jar in the working of the saw, and one cannot obtain the same tension as before; hence a great source of imperfection in the work.

If it is answered, why not have larger and heavier blades, we reply that in that case the tension for working must be still greater, the pullies heavier, and the proportionate cost of working increased, not to speak of the increased cost of the blade itself.

All these causes tend to vitiate the results of band-sawing. In fact, the planks or panels cut by band-saws never are, and never can be, of completely uniform thickness throughout, and do not find a good sale, good wood being spoiled by bad sawing, and in countries where wood is dear this is a serious matter. In England we believe fine cutting is more sought for than in this country; and fine cutting depends mainly on the regularity of the setting of the saw. The marking of the wood results from some of the teeth not being cleanly set, and where there are such a number of teeth as in these long band-saws it is most difficult to avoid this.

The band-saw has its own special application, and within that limit is a splendid tool: that is, for cutting in curves or irregular-shaped cuts. But to employ it on a large scale for heavy sawing is taking it out of its proper work. This is well understood in England, where large band-saws are not used in converting timber. On the continent the band-saw is in use, however, to a certain extent for large work. It is a very attractive-looking instrument, it makes little noise, and it has come into fashion (and in France there are fashions in machines as well as in ladies' dresses), and it has been pushed by the makers of this class of saw in their own interest.

The one characteristic merit of the band-saw is the continuity of its cut. Vertical saws, say the sawyers, cut only in descending, the time occupied in raising the blade again is lost, and the cut is discontinuous. A French manufacturer has however surmounted this difficulty by making a vertical saw with teeth to cut both ways (*denture alternée*). The arrangement of the teeth is such as to allow of the free escape of the sawdust; and owing to the great speed of the saw the cutting is virtually continuous. This saw is working in the French, Portuguese, and Brazilian Government dockyards, and is reported to have very satisfactory results.

The sharpening is done very quickly, and can be done while the saw is working, and the change of the blade demands only three or four minutes. The length of the saw is not more than 2 mètres at the most. The power employed is completely independent of the tension of the blades, which is stretched in a frame that bears all the strain. Soldering for breakages is never required.

The blade is in high tension, preventing an inconvenience familiar to all sawyers with the use of band-saws, and which is called in France *tirage à cœur*. The flexible band-saw has a tendency to swerve towards the heart of the wood, interfering with the true vertical direction of the cut. Consequently, in France the wood sawn by the vertical saw above described commands 15 to 20 per cent. better price than that sawn with the band-saw.

The vertical saw blade lasts much longer than the band-saw, and the blade is only one-fourth the cost to begin with. It will saw 1·50 superficial mètres of wood per minute. It has also been applied to machines with several blades for sewing up square blocks. Both machines, the single and the multiple blade, were at work continuously at the Paris Exhibition of last year. P. ARBEY,

Ingénieur des Arts et Manufactures

(Maison F. Arbey et Fils)."

SKY-SIGNS AND ADVERTISEMENT BOARDS.

SIR,—As the matter of sky-signs and advertisement hoardings and boardings has been made the subject of special comment in your last issue, I may be allowed to observe—in response to your remark, "perhaps some district surveyor will next take up the subject"—that the subject has already been taken up by myself; and the ruling of the Bow-street Magistrates, obtained in the following case (only one out of several of those which I have brought before them), has been so distinct and clear that the matter may be considered as, so far, settled in this district, I hope:—

First: D. S. St. Giles and St. George *v.* Willing (reported fully in Bannister Fletcher's edition of Building Act, 1882, pages 20-21, &c.). As regards boarding affixed to walls of house in Little St. Andrew-street, for advertisement purposes. This kind of boarding is considered as especially dangerous in case of fire, as it covers all windows and openings and prevents their use for light or air. Notice was required for the "work" as done "*in, to,* and *upon*" a building, and its removal was required as being woodwork irregularly fixed thereon. Since then Messrs. Partington and others have several times been required to remove similar woodwork from face of various buildings, and have done so, the placards being now fixed to the brick face without any woodwork, and so without covering up any windows or openings.

Secondly, as to *sky-signs*. The District Surveyor *v.* Sage, Bow-street, 1888: summoned for want of notice, and to take down sign as a dangerous structure. It was decided at Bow-street that notice must be given to the District Surveyor for this as work done "*in, to,* and *upon*" a building, and that as a dangerous structure it must be made safe, &c.

Oxford-street.—This case against owner of No. 51, New Oxford-street, was peculiar, and shows how easily the best intentions are frustrated by interests of a different kind springing up in opposition (in this case that of Crown property). At the end of Shaftesbury-avenue, where it enters Holborn, was the rough flank wall of the building No. 51, exposed by the pulling down of the adjoining house to form sufficient width for this entry to the new street. This rough wall was made into a cemented architectural front, with panels, &c., at the cost of the ratepayers, through the Metropolitan Board of Works. These panels were supposed to be simply architectural decoration, and being a very poor kind of finish for such a fine thoroughfare as Shaftesbury-avenue, and standing in such a commanding position, it was suggested by some good citizen that it would be just the position for a good fountain, and an offer was made to erect one entirely at private cost. But this was opposed, because for one thing the Crown had leased these panels for advertisements, and had required a sham shop front to be erected for the same purpose. These panels are now filled in with staring enamelled iron advertisements, but the sham shop front has been prevented by the application of the Building Act. Surely it would only be a graceful thing for the Crown to forego any extra rent it may receive for these panels being filled with advertisements and allow the Local Authority—the District Board—to arrange with the worthy citizen who would bear the expense himself to erect his fountain, and so take away the reproach attaching to this particular spot at present through the inconsiderate action of the Crown agents or the Office of Works. C. F. HAYWARD.

October 11, 1890.

R.C. CHURCH OF ST. JAMES', SPANISH-PLACE, W.

SIR,—With reference to a paragraph in your issue of the 11th inst., I beg to say not only are the dressings of the exterior of Portland stone, but the whole of the rock-faced ashlar as well.

As this is the first building in London where this has been used, I thought, perhaps, you might care to mention the fact in your next issue.

This rock-faced ashlar was supplied by myself.

Portland. F. J. BARNES.

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The Student's Column.

HOT-WATER SUPPLY.—XVI.

IMPROVED AND OTHER SYSTEMS; PECULIARITIES NOTICED FROM EXPERIMENTS, AND THEIR RESULTS IN PRACTICE.

PERHAPS one of the most interesting, as well as instructive, things that it is worth anyone's while to erect, is a model hot-water apparatus; its construction is simplicity itself, and to those who are at all interested it well repays the trouble. It would prove a most expensive undertaking to have the pipes especially made of iron, and the joints in themselves would possibly deter the most ardent, and what would prove most fatal to this arrangement is that, when erected, results could only be tested by feeling the different parts of the structure and judging by the temperature outside, the same as in an ordinary house system.

If we make the reservoir of glass, and use a small-sized glass tube (say ½ in.) for the pipes, we then have an apparatus that will permit of its interior phenomena being *thoroughly* investigated, every peculiarity, however trivial its action, being instantly noticeable; and, provided the proportions are about true, every reliance can be placed on it as a model of the actual working of a system. Amber dust, obtained by filing np a piece of broken pipe mouthpiece (provided it is amber), will render the movements of the water easily perceptible, as it is a material the particles of which will be found to remain perfectly still in still water, and only move as the particles of water propel them. The glass tube can be jointed with rubber tubing.

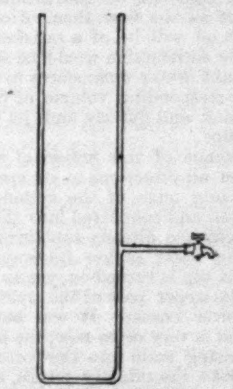

FIG. 35.

Perhaps one of the most useful results noticed in an apparatus of this kind, and which has proved to be a result of almost every day utility to many who have noticed it, is that water proceeds both up and down a flow-pipe in equal volume when a draw-off tap connected to that pipe is opened; this is a perfectly natural result, as any work on hydrostatics shows us that in an apparatus of this kind the water cannot very well proceed from one way only, yet if a number of intelligent hot-water fitters were asked from whence does the water come that flows out of a tap when it is opened, whether up the flow-pipe from the boiler or down the flow-pipe from the tank (on the tank system), the chances are that not one will say that the water proceeds equally half each way, and the consequence is that numberless mistakes occur, some of them very perplexing to the uninitiated.

To more clearly explain the phenemona in question, if we erect a double tube, as at fig. 35, and insert a draw-off tap in it at *any* point, as shown, and we then open the tap, what takes place? The water that issues from the tap does not wholly proceed from the pipe above the tap, neither does it wholly proceed from that portion of the pipe below, for it will be found that as the water flows so will the level of water in the pipes be lowered exactly equal in each pipe, and this is a sure indication that the pressure both down and up is exactly equal, the same as if the lower part of the tube were taken away, as in fig. 36. This will make it clear that we must expect water from both directions when a tap is opened anywhere in the circulating pipes of a hot-water apparatus, as we have only to place a boiler at the lower end of the pipes (fig. 35) and a reservoir at the top extremity to have a tank apparatus almost complete.

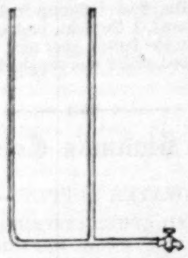

FIG. 36.

The commonest fault arising from an ignorance of this fact is the "returning" of a draw-off service on a tank apparatus. The draw-off service, of course, proceeds from the flow-pipe, and is carried back and connected into the return, and the effect is that the water does not lie stagnant, as it does in a single pipe, and the hot water is brought right up to the tap, or nearly so; everything is satisfactory up to this point, but immediately the tap is opened a partial failure manifests itself, for water will instantly proceed in equal quantities from both flow- and return-pipes, and as it is the exception rather than the rule for the return-pipe to be hot the water that issues from the tap will not always be of a satisfactory temperature, certainly not as hot as it might or should be. Should the whole apparatus be full of hot water so that the contents of the return-pipe are nearly as hot as the flow, then, of course, the water drawn off will be of a satisfactory heat, but even this satisfaction would be short lived, for the instant water commences to flow from the tap a corresponding volume of cold water enters the tank and quickly finds its way down the return-pipe.

An observance of this action of water proceeding from all directions to an open tap has led to the rising main of the cylinder system being returned and connected into the cylinder at a high point (as already explained), so that although the water makes its way up both pipes when a tap is turned on, yet as both proceed from the upper part of the cylinder no ill result whatever ensues. It was but a short time ago, and is very often now, the practice to return the rising main into the bottom of the cylinder or into the primary return, and many an apparatus has been cured of its inefficiency or been greatly improved by the mere alteration of this detail.

The discussion of this particular action may not strike everyone as being worthy of the importance that is being attached to it, but in practice it will be found that there is no effect which requires to be so continually under consideration when a problem in this work presents itself, and a knowledge of it is of the utmost value in a practical sense.

It should be mentioned that the question of the friction or resistance that water experiences in flowing through pipes has not been overlooked, but it makes such a trifling difference to this particular subject that it is scarcely worth consideration, yet, of course, if a tap were so situated that in one direction the water had only to flow a few feet, and in the other direction a hundred feet, a marked difference would be noted, but so great an inequality seldom occurs.

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SURVEYORSHIPS.

Withington. — The Withington Local Board (near Manchester) have increased the salary of their Surveyor, Mr. A. H. Mountain, from 200*l*. to 230*l*. per annum.

Diocesan Surveyorships.—**Mr. F. W. Waller, architect, of Gloucester, has been reappointed as Surveyor of Ecclesiastical Dilapidations in the Archdeaconries of Gloucester and Cirencester; and Mr. C. E. Ponting, of Lockeridge, Wilts, has been reappointed to a similar office in the Archdeaconry of Bristol.**

GENERAL BUILDING NEWS.

Re-opening of Peterborough Cathedral.—After a restoration which has been in progress since the beginning of 1883, as chronicled and illustrated in our columns from time to time, Peterborough Cathedral was on Tuesday reopened. The work which has been done has been of a most extensive character. The great central tower was at the end of 1882 found to be in so insecure a state as to necessitate its being entirely taken down and rebuilt. This has been done, the tower being now rebuilt on solid foundations. In addition, the pillars of the choir and the north and south transept roofs have been repaired, and both transepts have been underpinned. These works, which were essentially necessary for the security of the fabric, have absorbed the greatest portion of the expenditure. The other works which have been done include the cleaning of the internal masonry of the nave, aisles, and western transepts, the placing of a cement floor in the triforium, and new bell frames in the north-west tower. The total cost of these works has been 31,669*l*. 17s. 7d. The works on hand, or which have been provided for by special donations, consist of a choir pulpit, Bishop's throne, and marble floor for choir, exclusive of aisles and transepts. This is as far as the work has at present gone with the funds in hand; but there are other works certified by the architect, Mr. Pearson, as urgently needed, which are estimated to cost 4,000*l*. The work in question consists in making good the masonry of the north and south transepts, and in underpinning and repairing the north-east angle of the eastern chapel. It is also proposed, when funds are forthcoming, to complete the stalls with bookboards and seats, at a cost, with canopies, of 5,176*l*., to re-arrange the east end of the choir, and to reconstruct the organ in another position.

Model Dwellings for Artisans, Birmingham.—At a meeting of the Improvement Committee of the Birmingham City Council on the 8th inst., the Clerk (Mr. A. E. Davis) reported that the model houses erected by the Corporation in Ryder-street had been completed and occupied. There are twenty-two houses, and they have been built at a cost of 4,000*l*., Messrs. Martin & Chamberlain, of Birmingham, being the architects, and Mr. John Wood, of Handsworth, the contractor. Each house consists of a sitting-room, scullery (fitted with boiler and other necessary conveniences), two bedrooms, and an attic. At the back there is a large asphalted yard for the use of all the tenants. Water is laid on.

The Artisans', Labourers', and General Dwellings Company, Limited.—This company has resolved upon an important extension of its operations. Another extensive suburban estate has been secured for the purposes of the company. Although the attention of the board has for the last few years been chiefly directed towards block buildings in central London, the work of the company in the suburbs has not been lost sight of, and the directors have acquired Leigham Court, Streatham-hill, a freehold estate of 66 acres, upon which it is proposed to build about 1,600 houses and shops of the same kind as those on its Shaftesbury Park, Queen's Park, and Noel Park estates.

New Technical School, Coatbridge, N.B.—The foundation-stone of Coatbridge Technical School was laid on Saturday, the 11th inst., by Sir Archibald Campbell, Bart., M.P. The new building will form a part of the Coatbridge School, the main entrance is from Kildonan-street. Internally the school embraces on the ground-floor three lecture-rooms, a mechanical laboratory, and a large mechanical and architectural drawing-room about 50 ft. by 33 ft. On the upper floor there are three large art-rooms for elementary and advanced art, including painting; also a chemical laboratory about 52 ft. by 32 ft. with chemical lecture-room and a preparation-room. The chemical laboratory when finished will be fitted up for sixty students doing practical work. There are also a sufficient number of retiring-rooms, lavatories, and other conveniences for such a building. The buildings are being ventilated by Robert Boyle & Son's patent system, and heated by hot water at low pressure. The whole buildings have been erected from plans by Mr. James Davidson, architect, Coatbridge, and the work is being carried out under his supervision.

A New Roman Catholic Church for Hull.—On the 7th inst., the foundation-stone of the new Roman Catholic Church of St. Mary's, Wilton-street, Hull, was laid by the Bishop of Middlesbrough. The building has been designed in the Early English style of architecture, and is dedicated to the Sacred Heart and St. Joseph. The accommodation is for 500 adults, and the contract price 1,868*l*. It is being carried out from a design of Messrs. Smith and Brodrick and Mr. A. Lowther joint architects.

New Wesleyan Chapel, Saltash.—On Tuesday last were laid the memorial stones of a new Wesleyan Chapel for Saltash. The new chapel is to cost 3,500*l*. It will stand at the top of Fore-street, and seat about 612 persons. There will also be a schoolroom on the ground-floor, and vestries and infant class-rooms on the first-floor. Mr. Finch, of Plymouth, is the contractor, and Mr. H. J. Snell, of Plymouth, the architect.

A New Board School for Benwell.—The foundation-stone has just been laid of a new Board School at Benwell, Northumberland. The rooms of the school are all on the ground-floor. The building is of stone, with slated roof, the insides of the roof being open timbered, stained, and varnished. The main school for boys and girls is 89 ft. by 22 ft. Connected with this school are five class-rooms, 25 ft. by 24 ft., each capable of accommodating sixty children. There is also a cooking-room fitted up with the latest improvements. The infant school is 36 ft. by 22 ft., and connected with this are two class-rooms, 24 ft. by 20 ft. The school has been designed by Mr. J. W. Thompson, architect, Newcastle, whose plans were selected in competition. The contract has been let to Messrs. T. & W. Common, of Horsley, for 4,630*l*.

A New Hospital for Birmingham. — The Governors of the Birmingham Hospital have just decided to erect new buildings on a more convenient site, at a cost of considerably over 100,000*l*. The present buildings are antiquated and inconvenient.

Schools, Cadbury Heath.—The designs of Messrs. W. S. Bernard, F.R.I.B.A., and R. M. Drake, of Bristol, have been selected in open competition for a new Board School for 300 children, to be erected at Cadbury Heath for the Oldland School Board.

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SANITARY AND ENGINEERING NEWS.

Technical Education of Plumbers at Brighton.—At the Brighton Technical and Manual Instruction School, York-place, an evening class in practical plumbing has just been opened. The instruction given will be in accordance with the syllabus of the City and Guilds of London Institute, the examination in this subject including Mechanics and Chemistry allied to plumbers' work as required by the Institute. The practical teacher is a registered plumber under the Plumbers' Company.

St. Leonards Pier.—The Mayoress of Hastings performed the ceremony on the 9th inst. of screwing the last of the 22,500 bolts in the ironwork of the St. Leonards pier.

Harbour Improvement at Weymouth.—On the 9th inst., Mr. Alfred Dennis, the Mayor of Weymouth, laid the final stone of the new quay wall which has just been completed in connection with an important widening of the quay at a cost of about 12,000*l*.

Duffield Waterworks.—At the request of the Belper Rural Sanitary Authority, Mr. W. H. Radford, C.E., of Nottingham, has sent in alternative schemes for waterworks at Duffield, and they are now under consideration. In one scheme Mr. Radford proposes to take the water from the Hazlewood spring, and store it in a service reservoir, and supply by gravitation, any future deficiency being made good by putting down the pumping station mentioned below. In the alternative scheme Mr. Radford proposes to pump river water from the alluvial deposit, after natural filtration through sand and gravel, the water being pumped into a summit reservoir to command the district.

New Pier for Blackpool.—It is proposed to construct a third pier at Blackpool, and a meeting was held on Monday night in furtherance of the scheme. The new structure will jut out from the promenade at the South Shore, and a special feature in connection with it will be a large pavilion for concerts and other entertainments at the shore end.

Proposed Birmingham and Liverpool Ship Canal.—A meeting was held on Tuesday of the Dudley Town Council and the Dudley Chamber of Commerce to consider the proposed Birmingham and Liverpool Ship Canal Scheme. To commence at Birmingham the canal, it was suggested, should pass through Black Country towns onwards to Wolverhampton. Mr. Beriah Shepherd, the originator of the scheme, addressed the members, giving details as to route, method, cost of working, &c. He said the canal was estimated to cost 2,800,000*l*., without the land, which was 1,200 acres, and the work could be done within three years. After some discussion, a resolution was moved and unanimously carried, expressing approval of the scheme, and declaring it to be worthy of support.

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FOREIGN AND COLONIAL.

France.—The works for the consolidation of the Pont Neuf, commenced in March last, are now completed.——The works have been commenced for the derivation of water for Paris from the sources of the Avre, the Vigne and the Verneuil. The works comprise three distinct sections; first the construction of a grand aqueduct in the department of the Eure and Loire; second the carrying of the water through the department of Seine-et-Oise where the high ground of Marly and St. Cloud will have to be tunnelled, and thirdly the conduits to take the water into Paris, and the construction of a three-story reservoir at Montretout of 60,000 cubic mètres capacity, representing three days' supply for Paris. The water will be distributed in Paris by an iron aqueduct following the new railway line from Moulineux.——The Ministry of Public Works has under consideration a project for a bridge between the two hills of Croix Rousse and Fourvières at Lyons, crossing the Saône at a height of 107 mètres above the river. Lifts will be established on each bank to raise passengers to the hill level.——At the Columbier barracks at Rennes a lead coffin has been discovered containing an embalmed body clad in monastic vestments. The barracks were built on the foundations of an old convent.——A monument to the memory of Camille Desmoulins is to be erected at Guise.——M. Bourgeois, the Minister of Public Instruction, is to proceed to Macon to inaugurate the statue of Lamartine in his native town. The ceremony is to take place on the 20th.——M. Mascart is about to instal at the Eiffel Tower a bronze thread or pendulum 115 mètres long, finishing 2 mètres from the ground, and attached to the centre of the second platform. It carries a steel sphere of 96 kilogrammes weight, and is intended to subserve some interesting scientific experiments.——The tower of the church of Revest des Brousses, in the Arrondissement of Forcalquier, has been struck by lightning, and the fall has also injured the works of art and paintings in the sanctuary.——The death is announced, at Onival-sur-mer, of M. Léopold Dingeon, architect to the Arrondissement of Abbeville, and former pupil of Lefuel. His career was a short but an honourable one, he obtained many premiums in public competitions and was a corresponding member of the Société Centrale des Architectes.——The new Mairie at Gagny (Seine-et-Oise) has just been opened.

Dresden.—On the "Brühlsche Terasse," and opposite to the New Ministry of Finance in course of erection, on the other side of the river, a block of buildings is being erected to contain the offices, schools, and exhibition halls of the Royal Academy of Saxony. This very extensive block (the river front of which measures 170 mètres) has been planned under the superintendence of Professor Lipsius, and will show Rennissance façades carried out in a good Saxon freestone.

Prague.—The still remaining piers of the old bridge have been carefully examined by order of the municipal authorities of the city. We hear that besides the piers dismantled during the recent floods two others, No. 5 and 8, will have to be entirely rebuilt, flaws having been found in their foundations. As the thorough repair of the old monument will take many years, a provisional wooden bridge is to erected alongside the damaged one.

Charlottenburg.—The first part of the extensive sewage system for this town, commenced 1887, and so far already costing 7,500,000 marks, or nearly 375,000*l.*, was opened on the 6th inst., an official ceremony taking place in honour of the occasion. Up to date, 30,000 mètres' length of drains and sewers have been laid; the largest sewer section measures 2·30 by 2·70 mètres.

Asia.—According to a German contemporary, a German engineer, Herr Bethge, has been commissioned by the Siamese Government to construct the proposed Bangkok-Corat railroad, in spite of the English competition.

North Sea and Baltic Canal.—For those interested in canal-building, we take note of a map of the above canal which has been lately published by order of the authorities under the special superintendence of Reg. Baumeister Brennecke. Some notes referring to ground, construction, &c., are appended. It is published by Patsch, of Berlin.

French Exhibition in Moscow.—Between May and October next a French Industrial Exhibition is to take place in Moscow, but the idea is greatly opposed by native and German manufacturers in Russia. The exhibition will be held in the buildings of the Moscow Exhibition of 1882.

The Tashkend Industrial Exhibition.—An industrial exhibition is being held this season at Tashkend, in order to show the progress of industry in Central Asia. It has been a great success, having been visited by some 35,000 persons, including many foreigners, who have been greatly impressed with the show.

Sweden.—During the summer, granite to the value of 6,000*l.* has been exported from the west coast of Sweden, chiefly to Germany.——Up to the present nearly 40,000*l.* have been expended in the restoration of the old Upsala Cathedral, and there is still in hand 15,000*l.* The stained windows are being made in Sweden for the first time.——The ancient Castle of Gripsholm, near Stockholm, the most celebrated in Swedish history, is to be restored to its appearance about the year 1500, according to the plans of Herr Lilljekvist, architect, which have been approved by King Oscar.

Halle.—The new railway-station has just been completed, and was handed over for public use last week. The new station buildings, although below the present standard of the large modern stations of the empire as regards architectural merit, deserve mention on account of the clear and practical planning shown in them. Among the new buildings in Halle which are worth notice are those erected in connection with the University; the splendid group of hospital buildings and the new Physical Institute deserve to be specially taken notice of; whilst of those belonging to other bodies the new Provincial Law Courts and the premises of the Mining Board ought not to be passed over. More important, however, than the above erections, taking a prominent position among the most modern works in Germany, may be deemed the new theatre, a model one of latest date, containing 1,200 seats, erected according to the designs and under the superintendence of Herr Seling, of Berlin, at a cost of 1,200,000 marks (the original estimate, by the way, was 400,000). Among the buildings at present in course of erection is a new lunatic asylum for university purposes, a municipal poor and work house of large dimensions, an archæological museum, and a building for the newly-formed town fire-brigade. The horse tramway is to be turned into an electric one, the concession for this purpose having been given to a Berlin company.

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MISCELLANEOUS.

Bradford Historical and Antiquarian Society.—The annual meeting of the above society was held in the Alexandra Hotel, on Monday evening last. The chair was taken by the President, Mr. T. T. Empsall, who called upon the Hon. Cor. Secretary, Mr. J. A. Clapham, to read the annual report. The society is in a very flourishing condition, numbering 224 members. The papers given during the winter session had been very valuable, and the excursions in the summer to various places of historical interest much enjoyed. The election of officers and council then took place. The following were elected officers and council of the society:—President, Mr. T. T. Empsall; Vice Presidents, Messrs. John Lister, M.A., and Wm. Thackray; Treasurer, Mr. Wm. Glossop; Editorial Secretary, Mr. Wm. Cudworth; Corresponding Secretary, Mr. J. A. Clapham; Librarian, Mr. Thos. Scorah; Council, Messrs. J. Bottomley, W. M. Brookes, C. A. Federer, Thos. Lord, Richard Poole, Wm. Suddards, and Butler Wood; Auditors, Messrs. Thos. Howard and J. W. Turner. Five new members were admitted. The study of architecture was strongly recommended, and it was said that Parker's "Introduction to the Study of Gothic Architecture" was a very valnable work published at a very reasonable price.

Cable Tramway in New York.—New York is much behind most of the large American cities in its tramway system. Horse traction, with all its horrors and inconveniences, is the rule; but there is now to be a cable railway up Broadway, and work is, according to our American contemporary, *Engineering News*, to be begun at once, and a section of the line will be finished by the beginning of the winter. There is a feature in connexion with this enterprise which we commend to the notice of our own "local authorities." The street will be paved at the same time that the line is laid, and "all companies having mains in the streets will be required to put the same in order before the new pavement is laid." New York is notoriously the most ill-paved city in Christendom, and "all companies having mains in the streets" have hitherto seemed to work their wicked will unchecked by authorities of any kind whatsover. If we are to gather that there is to be a new departure in this respect it will be a more welcome change than even that of substituting a steam-engine for the unhappy horses that now supply motive power for street line traction.

The Unhousing and Housing of the Poor.—Perhaps no sanitary measure is more desirable as such than the demolition of the London "rookeries." Tenanted for many years by the very poorest of our poor, haunted continually by filth, disease, and vice, their existence is a constant menace to more wholesome neighbourhoods, and the space they stand on constitutes their sole value. In spite of these facts, however, the work of renovation has need to proceed without undue haste, for an evident reason. The housing of their inmates is a matter of concern, and occasionally also of some difficulty. The occupant of a slum cannot always find a more suitable home. Model buildings, often excellent in design, though let at the most moderate rents, are still too costly for his precarious means. The less pretending tenements of an older type are occupied by others like himself, but often also by workmen of a better class, attracted either by a prospect of economy or a dislike to the model buildings. These latter, indeed, do not seem to be duly appreciated. Airy, clean, commodious, economical, they are still to some extent unpopular. According to Dr. Yarrow, medical officer for St. Luke's parish, skilled workmen do not appreciate the advantages of such homes. He mentions the case of two blocks, in each of which many sets of rooms are still vacant. Unless it depend upon an objection to the collective life of the flat system, we are at a loss to account for this apparent oversight. It is possible that local conditions may have exercised some influence, and it would be of interest to learn whether other buildings of like type are as thinly populated as those above mentioned. Meanwhile we may remark that their construction as a rule affords reliable guarantees for sound sanitary condition, a consideration which should never be disregarded. The housing of the poor will be a question of the time for many years to come, and it may well occupy the attention of divisional sanitary authorities.—*The Lancet.*

The English Iron Trade.—The unsettled state of the English iron market has been further complicated by a partial cessation of all business, both buyers and sellers being much perplexed by the present abnormal conditions of the trade, and consequently reluctant to operate to any large extent. There has been a decline in pig-iron prices, but the finished products display a steadiness which shows that there is a large reserve of work in hand, and that manufacturers believe in an early recovery of the crude iron market. Scotch warrants have gone down about 2s. 6d. per ton since the commencement of the blast-furnacemen's strike, which appears to be farther off from settlement than last week. It is impossible to say what Scotch makers would sell such iron for as they happen to have yet in stock, for they still abstain from quoting. Although hematite iron has declined 2s. per ton on the week in the north-west, the stability of the market seems to be greater, makers continuing to book large parcels. The tinplate market keeps very strong, and a further advance is announced. Shipbuilders have been able to add to their order-books, and continue active, and engineers likewise find ample work.—*Iron.*

Architectural Association Conversazione.—Messrs. W. Woollams & Co. ask us to notify the fact that the name of their firm should have been given in the list of firms contributing to the Conversazione as "W. Woollams & Co." not "Woollams & Co." simply. This is not an idle correction, as it appears, rather curiously, that there is a firm of John Woollams & Co., also paper-stainers and in the same neighbourhood, and also descended from the founders of the original firm, now divided into two which have no business connexion with each other. The invitation to contribute to the Conversazione was delivered by mistake to Messrs. John Woollams & Co., who declined, and the Committee at first thought the refusal came from the firm of W. Woollams, whom they had intended to invite.

Modernising Venice.—The modernising of Venice, says the *Weiner Banindustrizeitung*, is proceeding apace. Canals are being filled in, and streets made instead, whilst the handsome, light gondolas are fast disappearing and replaced by steamers. Of late a large number of the magnificent ancient palaces, with the characteristic loggias, have been pulled down, and ugly barrack-like structures with tasteless façades erected in their place. However, up to the present this "vandal campaign" against the old structures has been carried on without any settled plan, but if a proposal now before the corporation of the city be accepted, it is to be feared that the appearance of the famous town will be entirely changed. The plan suggests the pulling down of the old buildings *en masse* and the building of modern ones, as well as the filling-in of canals and the making of streets on a large scale.

Agricultural Hall.—The Fourth Printers', Stationers', and Kindred Traders' International Exhibition and Market is appointed to take place at the Royal Agricultural Hall, London, on March 16 to 30, 1891. Considering the number of type-setting machines and other wonderful inventions that have been introduced during the last eight years, this Exhibition should prove interesting.

Fuel Gas.—In the United States is being carried out the often proposed plan of having separate mains for the supply of fuel gas. It is needless to say that the ordinary illuminating gas is an unnecessarily costly product when used for heating purposes. The introduction of the cheaper fuel gas, with its higher calorific value, would cause a great revolution in domestic economy, both in the matter of cooking and heating in our homes, and application for power purposes in gas engines. The Boston (Massachusetts) Gas Light Company announce that after November 1 they will be in a position to supply to houses in certain streets a fuel gas with a calorific value of about 400 heat units per cubic foot, at 60 cents. per 1,000. Chicago is still further in advance; for there, we are informed by an American technical journal, the Mutual Fuel Gas Company has established works with a capacity of over 2,000,000 ft. per day. About forty-two miles of mains are owned or controlled by the Company, and 3,000 customers are on its books. The charge here is 50 cents. per 1,000 ft., "with a probable discount to large consumers." Water-gas has for some time been used in the United States for calorific purposes, but these two enterprises seem a fresh departure, and may inaugurate quite a new era in the history of Gas Companies.

Flushing Cistern Disinfector.—We have had the opportunity of seeing in action, at the offices of the Sanitation Company, Limited, Victoria-street, Westminster, a working model of Taylor's patented contrivance for mingling liquid disinfectant with the water at each discharge of a closet or urinal flushing cistern. The invention is a very simple one, consisting merely of an ordinary bottle of disinfecting fluid, fitted with a special but simple discharging arrangement in the form of a small glass syphon-tube inserted through the cork of the bottle. The bottle is placed neck downwards in the flushing-cistern, and by reason of the operation of certain natural laws a teaspoonful of the fluid is automatically discharged into every charge of flushing-water at the time it is used. There is no leakage of the fluid between the times of the using of the flushing-water. If flushing takes place twenty times a day there will be twenty discharges from the bottle, and if only one flushing then only one discharge. There are no mechanical details.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*Club House and Premises	E. Grinstead Club Co. Lim.	5 Guineas	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Supply of York Stone	Folkestone Corp.	A. W. Conquest	Oct. 18
*Making-up Roads	Vestry of St. Mary Abbotts, Kensington	*Official*	Oct. 21
Alterations to Pier Rooms	Liverpool Corporation	do.	do.
Steel Work for Bridges, Boilers, &c.	India Office	do.	do.
Re-building Shop Premises, Ynyshir, near Porth	....	E. Jones	do.
Road Works	Gateshead Park Com.	*Official*	Oct. 22
*Extension of Station Buildings, Bristol	G. W. R.	do.	do.
*Supply of York Paving	Mile End Vestry	J. M. Knight	do.
*Broken Granite and Flint	Twickenham Loc. Bd.	H. M. Ramsay	Oct. 23
New Approach, Factory Bridge	Reading U.S.A.	A. W. Parry	do.
Retaining Wall, Wokingham-road	do.	do.	do.
Police Station, Ynysybwl	Glamorgan C. C.	*Official*	Oct. 24
Alterations to Police Station, Dowlais	do.	do.	do.
New Magistrates' Court, Barry	do.	do.	do.
Public Bath and Washhouse Appointments	Stockton-on-Tees Corp.	K. F. Campbell	Oct. 25
Two Covered Play-sheds	Methley (Leeds) Sch. Bd	Edwd. Henshall	Oct. 27
*Boundary Wall and Railing	St. Marylebone Grdns	H. Saxon Snell	do.
Sixteen Scullery Houses, Halifax	....	S. Wilkinson	do.
Broken Slag Road Metal	Byton (Parish) Loc. Bd.	Thos. Russell	do.
Wesleyan Chapel, Barry Dock Town	Rev. D. Young	Seward & Thomas	do.
*Sewerage Works	Hornsey Local Board	T. de Courcy Meade	do.
*Making-up Private Roads	do.	do.	do.
*Supply of Stoneware Goods	do.	do.	do.
*Asphalte and Wood Pavements	do.	do.	do.
*Concrete Pavements	do.	do.	do.
*Supply of Portland Cement, Lime, Bricks, Manhole Covers, &c.	do.	do.	do.
*Cinder Paths, Plumstead Common	London County Council	*Official*	do.
*Coast Guard Station, Walton-on-Naze	Admiralty	do.	Oct. 28
*Enlargement of Dining-room, &c. G.P.O.	Com. of H. M. Works	do.	do.
*Pipe Sewer	Camberwell Vestry	do.	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Main Drainage Extension	West Ham Council	Lewis Angell	Oct. 28
Alterations of Premises, Devonport	Plymouth Co-op. Soc.	H. J. Snell	do.
*Construction of Sewers	East Ham Local Board	W. H. Savage	do.
*Wood Paving Works	Fulham Vestry	J. P. Norrington	Oct. 29
*Making-up Roads	Barnet Local Board	W. H. Mansbridge	Oct. 30
*Pipe Sewers, &c.	do.	do.	do.
*Station Buildings, Houses, Cottages, &c.	G. E. R. Co.	*Official*	Oct. 31
*Shafts for Waterworks	Buckingham U.S.A.	B. Latham	Nov. 1
Renovation of Chapel, Talywain, Pontypool	....	D. J. Lougher	do.
Sewerage Works	Ashby-de-la-Zouch R.S.A	*Official*	do.
Cast-iron Water Pipes, Paving Setts, &c.	Dublin Corporation	Spencer Harty	do.
New Pumping Station, Boilers, &c.	do.	do.	Nov. 4
*Supply of Cast-iron Work	Com. of Sewers	*Official*	do.
*Underground Convenience	Westminster Vestry	G. R. W. Wheeler	Nov. 5
Borough Hospital, Kingsthorpe	Northampton Corp.	*Official*	do.
*Purchase of Cottages	Lewisham Union	do.	Nov. 6
*Waterworks	Quorndon Local Board	G. Hodson	do.
*Alterations to Boiler House, &c. West Ham	London County Council	*Official*	Nov. 10
*Erection of Arcade	Wrexham Arcade Co. Lim.	A. C. Baugh	Nov. 20
*Engineering Works, New Sanatorium	Salford Health Com.	*Official*	No date
*Greenhouses, Maida Vale	Messrs. Hooper & Co. Ld	....	do.
*Sludge Filter Presses	Sutton (Surrey) L. B.	Jno. Anstie	do.
Baptist Chapel, Rawdon, Leeds	....	T. H. & F. Healey	do.
New Offices, Stafford	J. F. & H. S. Humby	Geo. Wormal	do.
Granite Kerbing (1,000 yds.) Leicester	....	Cecil Ogden	do.
New Premises	H. Dew	Habershon & Fawckner	do.
New Schools (1,000 children)	Yardley School Board	Arthur Farrison	do.
Pulling-down and Re-building Premises, Carlisle	J. R. Creighton	G. D. Oliver	do.
New Hotel, Swansea	....	H. C. Portsmouth	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Applications to be in
*Surveyor, Inspector of Nuisances, &c.	Haverhill Local Board	120*l*	Oct. 27
*Building Inspector	Tottenham Local Board	150*l.*	Nov. 3

Those marked with an Asterisk (*) are advertised in this Number. Competition, p. iv. *Contracts, pp.* iv. vi., *and* viii. *Public Appointments, p.* xviii.

GOVERNMENT GRANT TO SCOTLAND FOR PICTURES.—The Board of Manufactures has just received a communication from Lord Lothian, Secretary for Scotland, announcing that the Government propose to give a grant of 1,000*l.* a year for five years for the purchase of pictures for the Scottish National Gallery. The subject is one which has often been considered by the Board of Manufactures, and the attention of various Governments has been repeatedly called to what is looked upon as the injustice done to Scotland in this particular respect, considering the liberality with which the London and Dublin Galleries have been treated. Hitherto not a penny for the purchase of pictures has come the way of Scotland, and in consequence many desirable works of art have passed out of the country which ought to have found a permanent home in the National Gallery. For a grant of this kind being at last secured to Scotland it is understood that the country is largely indebted to the efforts of Lord Lothian, who has been most anxious to further the views of the Board of Manufactures in connexion with this matter. The first 1,000*l.* will, we believe, be available after April next. The *Scotsman* suggests that the Corporation of Edinburgh should assist in the work and give another 1,000*l.* a year. "With a good National Gallery, Edinburgh is made more attractive to visitors, and its prosperity is thereby increased."

MANCHESTER SHIP CANAL.—As will be seen by an advertisement in our columns, the directors of the Manchester Ship Canal Company are inviting subscriptions for 600,000*l.* mortgage debentures at par. The directors hope to be able to open the lower section of the canal (Eastham to Weston Point) early in 1891, and the higher sections by the time fixed by the contracts.

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MEETINGS.

TUESDAY, OCTOBER 21.

Sanitary Institute (Lectures for Sanitary Officers).—Professor W. H. Corfield, M.A., on "Sanitary Appliances." 8 p.m.

Manchester Architectural Association.—Conversazione to be held in the Athenæum Lecture Hall. 7.30 p.m.

Glasgow Architectural Association.—Mr. W. P. Buchan on "The Ventilation of Buildings." 8 p.m.

FRIDAY, OCTOBER 24.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. Wright Clarke on "Details of Plumbers' Work." 8 p.m.

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RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

15,406.—PLASTER OF PARIS: *W. J. Oswald and others.*—According to this invention, plaster is made from old waste plaster moulds or casts, or artificially prepared hydrated sulphate of lime. Enormous quantities of this material is at present thrown away as useless, or used for whitening floors, &c.; but it is proposed to utilise it by grinding to powder, burning in kilns or in revolving furnaces, pounding the burnt material, and mixing with water. The plaster then hardens to the required degree in a few minutes.

16,192.—METALLIC SILLS FOR WINDOW FRAMES: *C. C. Broad and C. E. McCann.*—The sill which is the subject of this invention is cast of a hollow section, with an outline similar to an oak sill; but the ends of the sill are formed into raised shoes or sockets, to receive the ends of the pulley-styles, casings, or side-pieces, so that the point of junction between the sill and the side-pieces, instead of exposing a joint, presents a solid metallic surface, and prevents the penetration of moisture. A wood casing is fixed at the back of the sill, which may be raised to form an additional weathering, if required.

16,208.—LAVATORY PLUG: *P. M. Justice.*—This invention permits of the ingress and egress of water to or from the vessel to which it is attached. It is thus adapted for lavatory basins as a single fitting, sufficing for both fresh and waste water. It is a kind of double plug, with an annular casing, which is actuated by a hinged projection; when withdrawn the waste is let off, and when turned the water admitted to the basin.

16,527.—FIXING SASH-LINES: *W. Meakin.*—In order to attach the sash-lines, a face-plate carrying a socket through which a conical or tapering hole is formed to receive the sash-line, which is then, by a wedge-shaped piece of metal, firmly fastened in.

8,705.—BINDING-PLATE FOR BRICKWORK: *C. Bischoff.*—This invention refers to a plate the external surface of which corresponds in appearance to the outer face of the wall in which it is placed, and which is provided on its inner face with a means of securing the same to the rafters of a building. Ribs are used to strengthen the plates, which are principally designed for use with high brick walls.

NEW APPLICATIONS FOR LETTERS PATENT.

September 30.—15,418, J. Dalumi, Folding Ladders.—15,441, W. Kimberley, Combined Plane and Oilstone.—15,485, H. Lake, Hinge Mortising Machines.—15,491, W. Taft, Woodworking Machinery.—15,492, J. Gilmore and W. Clark, Mortising Machine.

October 1.—15,523, F. Trewinnard, Ventilating.—15,534, J. Thornhill, Bolt or Fastener.—15,541, R. Hallenstein, Fire-proof Doors for Enclosing Lift-openings, &c.

October 2.—15,600, H. Tuke, Making and Pressing Bricks, Tiles, &c.—15,617, A. Rose, Window Fastener.—15,632, R. Parker and A. Dagley, Cowls.

October 3.—15,654, C. Cox and F. Robinson, Pull-down Switches for Walls or Ceilings for Electric Light.—15,664, J. Carr, Plank for Scaffolds, &c.—15,678, W. Robinson and J. Terry, Plastering Compositions.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,826, R. McNally, Nail and Screw Combination.—13,166, J. Gardner and E. Craddock, Air-tight Cover for Cisterns.—13,351, J. Hamblet, Ornamental Flooring Tiles, &c.—14,017, P. Walker, Ventilators.—14,218, J. Adams, Door Springs, &c.—14,299, W. Morrison, Wall Ventilators.—14,406, J. Jones, Ventilation of Drains.—14,460, E. Edwards, Electric Bells.—14,532, E. Hill, Supporting Window Sashes.—14,622, W. & J. Martin, Convertible Window Sashes.—14,669, J. Wedderburn, Locks and Bolts for Doors, &c.—14,763, J. Hird and J. Ford, Fittings for Casement and Sash Windows, &c.—14,775, A. Glover, Paving Composition.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,327, G. Jerram, Paving for Roadways, &c.—20,454, D. Hunter, Fences and Gates.—1,544, G. Newman, Indicating Bolts or Fasteners.—5,459, W. Vears and others, Storage Cisterns and Water Waste Preventers.—9,864, H. Landers, Sharpening and Setting Saws.—12,304, W. & W. Brandford, Axle Sash Pulleys.—13,695, W. Brady, Nail-driving Tool.

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SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

OCTOBER 6.—By *Graves & Son*: 67 to 71, Nicholas-sq., Hackney, u.t. 14 yrs., g.r. 25*l.*, 600*l.*

OCTOBER 7.—By *Ventom, Bull, & Cooper*: 20, Great Chapel-st., Soho, f., r. 80*l.*, 1,700*l.*; 28, 30, and 32, South-st. Greenwich, u.t. 57 years, g.r. 18*l.*, r. 126*l.*, 1,290*l.*; 183, Edgware-rd., u.t. 30 yrs., g.r. 6*l.* 6s., r. 120*l.*, 1,800*l.*; 187 and 189, u.t. 30 yrs., g.r. 12*l.* 12s., r. 300*l.*, 3,690*l.*; 201, u.t. 30 yrs., g.r. 6*l.* 6s., r. 110*l.*, 1,650*l.*—By *Horne, Son, & Eversfield*: 16 and 18, Blackwater-st., Dulwich u.t. 86 yrs., g.r. 13*l.*, 160*l.*; 58 and 60, Linnel-rd., Camberwell, u.t. 85 yrs., g.r. 12*l.*, r. 72*l.* 16s., 550*l.*; 10 and 11, Mayes-ter., Wood Green, u.t. 89 yrs., g.r. 8*l.* 8s., r. 50*l.*, 385*l.*—By *Fuller, Horsey Sons & Cassell*: A Range of Stabling Premises, Barnhand-st., Southwark, u.t. 10 yrs., g.r. 14*l.* 10s., 400*l.*

OCTOBER 8.—By *Furber, Price, & Furber*: 1, Jenkin's-yd., Holborn, u.t. 43 yrs., g.r. 10*l.*, r. 30*l.*, 150*l.*; 2, Jenkin's-yd., u.t. 36 yrs., g.r. 10*l.*, 150*l.*; 4, Jenkin's-yd., u.t. 45 yrs., g.r. 12*l.*, 130*l.*; 110, Hatton-garden, u.t. 7 yrs., g.r. 120*l.*, r. 445*l.*, 500*l.*; 1, Vineyard-gardens, Clerkenwell, u.t. 43 yrs., g.r. nil, r. 28*l.*, 230*l.*; 92, King's-rd., St. Pancras, u.t. 28 yrs., g.r. 4*l.* 13s., 560*l.*; 75, Marchmont-st., Bloomsbury, u.t. 9 yrs., g.r. nil, 35*l.*; 43, Eagle-st., Holborn, f., r. 28*l.*, 420*l.*—By *J. A. & W. Tharp*: F.g.r. of 23*l.* 4s., with reversion in 96 yrs., Cecil-rd., West Ham, 520*l.*; 4, Abbey-st., Bethnal-green, f., r. 26*l.*, 365*l.*; 278 and 280, Dalston-lane, Hackney, u.t. 57 yrs., g.r. 6*l.*, r. 41*l.*, 420*l.*—By *W. M. Ogden*: F.g.r. of 42*l.* 10s. 6d., with reversion in 63 yrs., Tulse-hill, 1,230*l.*; F.g.r. of 30*l.*, with reversion in 65 yrs, 860*l.*—By *Bradshaw Brown*: 19a and 21 to 23 (odd) Tooke-st., 2, Cheval-st., and the Tooke Iron Works, Millwall, u.t. 20 yrs., g.r. 16*l.*, r. 219*l.* 12s., 1,010*l.*—By *Walton, Warton, & Co.*: 1, 2, and 3, Albury Cottages, Hanwell, f., r. 46*l.* 16s., 350*l.*

OCTOBER 9.—By *Daniel Watney & Sons*: "The Boxley Abbey Estate," Boxley, Kent, containing 398a., 2r., 6p., f., 15,450*l.*; "Tyrland's Farm," containing 130a., 1r., 26p., 4,000*l.*; The Boxley Mill, and 70a., 1r., 15p., 4,600*l.*; An enclosure of f. woodland, 4a., 1r., 35p., 150*l.*—By *Newbon & Harding*: 1, Dickenson-st., Kentish-town, u.t. 67 yrs., g.r. 7*l.* 4s., r. 34*l.*, 225*l.*; 46, Highgate-rd, u.t. 72 yrs., g.r. 9*l.*, r. 52*l.* 10s., 380*l.*; 40, Huddlestone-rd., Holloway, u.t. 84 yrs., g.r. 7*l.*, r. 40*l.*, 350*l.*; 18 and 19, Ward-road, u.t. 66 yrs., g.r. 12*l.*, r. 70*l.*, 440*l.*; 6 and 7, Charlotte-st., King's-cross, u.t. 40 yrs., g.r. 14*l.*, r. 65*l.*, 440*l.*—By *Weston & Son*: 35, Evandale-rd., Brixton, u.t. 23 yrs., g.r. 4*l.* 4s., 275*l.*; l.g.r. of 42*l.*, Catherina-ter., Stockwell, u.t. 69 yrs., g.r. 8*l.*, 840*l.*; 87 and 91, Union-road, Clapham, u.t. 72 yrs., g.r. 15*l.*, r. 92*l.* 10s., 775*l.*—By *C. C. & T. Moore*: 2, Avenue-rd., Bow, u.t. 42 yrs. g.r. 4*l.* 4s., r. 28*l.*, 250*l.*; 49 to 61 (odd, Langthorne-st. Stratford, u.t. 30 yrs., g.r. 21*l.*, 290*l.*; 1 and 3, Barnby-st., u.t. 80 yrs., g.r. 5*l.* 12s., r. 41*l.* 12s., 270*l.*; three plots of f. land, Faraday-rd., Leyton, 120*l.*; 19, Woolmore-st., Poplar, f. beerhouse, 800*l.*—By *E. Stimson*: 47 to 53 (odd), Falmouth-rd., New Kent-rd., u.t. 8 yrs, g.r. 20*l.*, 340*l.*; 55, Falmouth-rd., u.t. 6¼ yrs., g.r. 5*l.* 5s.; r. 42*l.*, 130*l.*; 1 and 2, Huntsman-st., Walworth, u.t. 20 yrs., g.r. 3*l.*, r. 54*l.* 12s., 205*l.*; 27 to 33 (odd), Webster-rd., Bermondsey, u.t. 56 yrs., g.r. 20*l.*, 1,205*l.*; 79 and 81, Bushey-hill-rd., Peckham, f., 705; 53 to 59 (odd), Lyndhurst-grove, f., 1,585*l.*; 23, Wilton-road, Pimlico, u.t. 34 yrs., g.r. 7*l.*, r. 130*l.*, 1,200*l.*; 24, 25, and 26, Petworth-st., Battersea, u.t. 88 yrs., g.r. 10*l.* 10s., 780*l.*; 7, 9, and 11, Kilton-st., u.t. 76 yrs., g.r. 10*l.*, r. 100*l.* 2s., 640*l.*—By *Walton & Lee*: 2, Albion-rd., Hampstead, u.t. 54 yrs., g.r. 12*l.*, 800*l.*

OCTOBER 10.—By *S. Walker & Runtz*: 24, Hanover-st., Belgravia, u.t. 34 yrs., g.r. 7*l.*, 385*l.*; 15, Somerville-rd., New-cross, u.t. 59 yrs, g.r. 3*l.* 10s., r. 27*l.*, 205*l.*; 59 and 61, Somerville-rd., u.t. 59 yrs., g.r. 7*l.*, r. 57*l.* 10s., 430*l.*—By *W. R. Norris*: 24, Richmond-st., Southwark, u.t. 38 yrs., g.r. 4*l.* 10s., r. 32*l.*, 300*l.*—By *W. & F. Houghton*: 66, Ladbroke-grove, Kensington, u.t. 66 yrs., g.r. 20*l.*, r. 130*l.*, 900*l.*; l.g.r. of 20*l.*, St. Augustine-rd., Camden Town, u.t. 56 yrs., 365*l.*; 43, Paternoster-row, City of London, u.t. 52 yrs., g.r. 40*l.*, r. 240*l.*, 3,000*l.*; 6, London House-yd., u.t. 52 yrs., g.r. 20*l.*, r. 800*l.*, 2,400*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	15	0	7	5	0
Teak, E.I. ....load	10	0	0	13	0	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada..............load	2	10	0	4	5	0
Birch ,, ...	2	5	0	4	5	0
Elm ,, ...	3	10	0	4	15	0
Fir, Dantsic, &c.	2	0	0	3	15	0
Oak ,, ...	2	10	0	4	10	0
Canada	5	0	0	6	10	0
Pine, Canada red	2	10	0	3	10	0
,, yellow	2	0	0	5	10	0
Lath, Dantsic............fathom	5	0	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Deals, Finland, 2nd & 1st. std. 100	7	10	0	10	0	0
,, ,, 4th and 3rd	7	0	0	7	5	0
Riga	6	0	0	8	10	0
St. Petersburg, 1st yellow	9	10	0	14	10	0
,, 2nd ,, ...	7	10	0	9	0	0
,, white	7	0	0	10	0	0
Swedish	7	0	0	15	0	0
White Sea	8	0	0	17	0	0
Canada, Pine, 1st	13	0	0	24	0	0
,, ,, 2nd	9	0	0	16	0	0
,, ,, 3rd, &c.	7	0	0	10	0	0
,, Spruce, 1st	8	10	0	10	10	0
,, ,, 3rd and 2nd ..	6	10	0	8	0	0
New Brunswick, &c.	5	10	0	7	10	0
Battens, all kinds	4	10	0	15	10	0
Flooring Boards, sq., 1 in., prepared, First	0	10	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	5	6	0	7	9
Cedar, Cuba ....foot	0	0	3½	0	0	4½
Honduras, &c.	0	0	3½	0	0	4½
Mahogany, Cuba............	0	0	4½	0	0	6½
St. Domingo, cargo average ..	0	0	4½	0	0	6½
Mexican ,, ...	0	0	4½	0	0	5½
Tobasco ,, ...	0	0	5½	0	0	6½
Honduras ,, ...	0	0	5½	0	0	6½
Box, Turkey ....ton	4	0	0	13	0	0
Rose, Rio	12	0	0	19	0	0
Bahia	11	0	0	18	0	0
Satin, St. Domingo..........foot	0	0	9	0	1	3
Porto Rico	0	0	10	0	1	6
Walnut, Italian	0	0	4	0	0	7

METALS.

	£.	s.	d.	£.	s.	d.
IRON—Bar, Welsh, in London tn	6	10	0	6	17	6
,, ,, at works in Wales	6	0	0	6	10	0
,, Staffordshire, in London..	7	0	0	8	0	0
COPPER—British, cake and ingot	63	0	0	64	0	0
Best selected	66	0	0	67	0	0
Sheets, strong	71	0	0	72	0	0
Chili, bars	57	15	0	0	0	0
YELLOW METAL............lb.	0	0	6¾	0	0	6¾
LEAD—Pig, Spanish ....ton	14	10	0	0	0	0
English, com. brands	14	10	0	14	12	6
Sheet, English, 3 lbs. per square foot and upwards....	16	10	0	0	0	0
Pipe	17	0	0	0	0	0
ZINC—English sheet ....ton	27	5	0	27	10	0
TIN—Straits	99	0	0	0	0	0
Australian............	99	0	0	0	0	0
English Ingots............	101	10	0	0	0	0

OILS.

	£.	s.	d.	£.	s.	d.
Linseed ....ton	23	2	6	23	7	6
Cocoanut, Cochin	34	0	0	34	10	0
,, Ceylon	33	10	0	34	0	0
Palm, Lagos	0	0	0	0	0	0
Rapeseed, English pale	28	5	0	28	10	0
,, brown	26	15	0	27	0	0
Cottonseed, refined	20	0	0	0	0	0
Tallow and Oleine	21	0	0	40	0	0
Lubricating, U.S.	5	0	0	6	0	0
,, refined	7	10	0	12	0	0
TAR—Stockholm..........barrel	1	1	6	0	0	0
Archangel............	0	15	0	0	0	0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BECKENHAM.—For new billiard-room and alterations at "Holme Lea," Foxgrove-road, Beckenham, for Mr. Arthur Bray. Mr. Thos. Harriss, architect, 6, Southampton-street, Bloomsbury. Quantities by Mr. F. H. A. Hardcastle, 34, Southampton-street, Strand :—

J. C. Arnaud & Son	£673	Thos. D. Graty	£530

[Both of Bromley.]

BELFAST.—For building a schoolhouse and parochial hall at University-street, Belfast, for the incumbent, &c., of All Saints' Church. Mr. H. Seaver, architect, 128, Royal-avenue, Belfast :—

Alex. Murdock	£970	R. Corry	£875
Fitzpatrick Bros.	950	J. & R. Thompson	870
M. & J. Martin	932	Wm. Magee	850
H. Laverty	900	Isaac Hewett	830
C. J. Collen	899	M. Hearst	800
Wm. McCammond	897	T. McMillan, Ormeau-avenue, Belfast*	793
Wm. Gabbey	895		
James Kidd	891		

*Accepted.

BILLERICAY.—For the erection of a district hospital at Billericay, Essex, for the Billericay Union Rural Sanitary Authority. Mr. A. T. G. Woods, architect, New-road, Brentwood :—

W. Watson	£1,180 0	T. D. Whitehead	£1,015 0
H. Gozzett	1,100 0	Moss & Co.	1,000 0
Everett & Son	1,069 0	A. Ansell, Hatfield, Broad Oak, near Harlow (accepted)	995 0
W. Boardman	1,057 17		
Rogers & Robson	1,053 0		

BILSTON.—For the erection of a market hall, with iron roof, at Bilston, for the Bilston Township Commissioners. Messrs. Horton & Co., architects and engineers, Wednesbury :—

Wright & Co.	£4,949	Jesse Tildesley	£4,500
Jones & Son	4,855	Jacob Biggs	4,458
Bradney & Co.	4,678	Thos. Tildesley	4,350
John Mallin	4,572	Dorse & Son	4,140

For roof only.

Reay Bros.	£2,565	Rubery Bros.	£2,150
Willey & Co.	2,450	Walker Bros.	2,070
Bruce & Still	2,180	Jesse Tildesley	2,050
Hill & Smith	2,162	Lysaght & Co.	2,034

BIRMINGHAM.—For the erection of an hotel, sixteen shops, and offices, Corporation-street, for the Birmingham Exhibition Hall, Winter Garden, and County Hotel Company, Limited. Messrs. J. P. Sharp & Co., architects, Martineau-street :—

John Fell	£27,650	Gowing & Ingram, 133, Belgrave-rd, and John Parker, Conybere-street, both of Birmingham*	£23,000
H. Lovatt	25,367		
J. Parnell & Son	24,840		
H. Willcock	24,300		
T. Robotham	23,900		

* Accepted.

BIRMINGHAM.—For the erection of an Exhibition Hall and Winter Garden, Old-square, for the Birmingham Exhibition Hall, Winter Garden, and County Hotel Company, Limited. Messrs. J. P. Sharp & Co., architects :—

Builder's Work, exclusive of Steel Roof.

H. Lovatt	£12,500	Gowing & Ingram, 133, Belgrave-road, and John Parker, Conybere-st.*	£11,325
J. Parnell & Son	11,713		
T. Robotham	11,700		

* Accepted.

BIRMINGHAM.—For the erection of a warehouse, &c., Station-street, for Messrs. C. F. Marlow & Co. Messrs. J. P. Sharp & Co., architects, Martineau-street :—

T. Robotham	£2,875	J. Bowen	£2,699
W. & J. Webb	2,871	E. Giles	2,625
F. J. Briley	2,830	B. Whitehouse	2,623
G. Gill	2,780	J. Harley & Son	2,590
J. Webb	2,765	Gowing & Ingram, 133, Belgrave-road, Birmingham*	2,545
J. Parker	2,700		

* Accepted.

BLOEMFONTEIN (South Africa).—For carrying out certain works of additions and alterations to the premises of the National Bank of the Orange Free State, for the Directors. Mr. Herbert J. C. Cordeaux, architect, St. Andrews-street, Bloemfontein :—

Robertson & White	£2,500 0	J. R. Robinson	£1,670 0
E. Wilson	1,990 0	J. Lawlor*	1,595 0
E. Bickwell	1,985 0	D. Gellatly, Parsons & Co.	1,549 0
D. Thompson	1,703 11		

* Accepted.

BROMLEY (Kent).—For the completion of two villa residences at South Hill Park, Bromley, Kent, for Mr. J. Bramsdon. Messrs. Baxter, Payne, & Lepper, surveyors, 69, King William-street, E.C. :—

Hy. Sanford (accepted) £2,648 17 3

BROMLEY (Kent).—For erecting and finishing an addition to "Glenview," Bromley Park, Bromley, Kent, for Mr. Daniel Grinsted. Messrs. Wadmore, Wadmore, & Mallett, architects, 35, Great St. Helens :—

D. Payne	£697 0 0	Thos. D. Graty	£649 15 0
J. C. Arnaud & Son	675 0 0		

[All of Bromley.]

CARDIFF.—For the erection of three houses in Keppoch-street, Cardiff, for the trustees of the Welsh Presbyterian Church. Mr. Charles Rigg, architect, 24, High-street, Cardiff :—

J. H. Venning, Cardiff (lowest accepted) £648

[Six tenders received.]

DARENTH.—For the establishment of telephonic communication between the Schools and Pavilions for Imbeciles at Darenth, near Dartford, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C. :—

A. W. Derby	£3,760 0	W. G. Lilley	£2,637 0
A. T. Judd & Son	3,454 0	W. S. Long	2,080 0
W. Dudley	3,081 0	W. F. Hadlow	1,974 0
George Foxley	3,000 0	D. J. Springett	1,890 0
M. Batchelor	2,996 18	W. Akers & Co., South Norwood*	1,790 0
Martin & Wells	2,859 16		
T. Taylor & Son	2,760 0	F. Dainton	1,270 0

* Accepted.

DURHAM.—For supplying and laying 1,900 lineal yards of 2 in. and 3 in. water mains, with valves, stand-posts, and a second-hand boiler for a storage tank in connexion therewith, at Cassop Colliery, for the Durham Rural Sanitary Authority. Mr. Geo. Gregson, engineer and surveyor :—

T. Dixon	£444 17 0
J. Carrick, Durham (accepted)	346 0 0

EAST FINCHLEY.—For the nave, south aisle, and narthex of All Saints' Church. Messrs. J. E. K. & J. P. Cutts, architects, 28, Southampton-street, Strand, W.C. :—

Peto Bros.	£5,100	Lathey Bros.	£4,970
B. E. Nightingale	5,080	Woodward & Co.	4,830
Adamson & Sons	4,991	Holloway Bros.	4,800
Dove Bros.	4,975	J. Tyerman	4,735

EGHAM.—For levelling, metalling, and making good by-roads at Egham, for the Windsor Rural Sanitary Authority. Mr. W. Menzies, surveyor, Englefield Green, near Egham, Surrey :—

	Hythe-road.	Cumberland-street.	Back of Hythe-road.	New-road.
G. Franks	£289 0 0	£142 0 0	£122 0 0	£278 0 0
Charles Mott	370 0 0	180 0 0	151 15 0	348 9 0
E. & W. Iles	283 18 2	139 16 3	120 13 11	272 9 9
Thomas Free & Sons, Maidenhead	*282 0 0	*125 10 0	*107 10 0	255 10 0
Geo. Gray	439 0 0	184 15 0	194 5 0	337 0 0
G. & C. Allen	348 17 6	169 15 0	140 16 0	329 10 0
J. B. Baigent, Egham	384 7 0	129 15 0	158 9 0	*250 13 4
W. H. Wheeler	288 0 0	131 15 0	128 19 4	308 18 0

* Accepted subject to a formal contract being entered into.

GATESHEAD.—For the erection of rooms for cookery at Gateshead, for the Gateshead School Board. Mr. Chas. Kempson, C.E., architect, West-street, Gateshead :—

Brown & Son	£1,420	John C. Hope	£832
F. Wakefield	917	T. H. Hutchinson	800
T. Weatheritt	903	John Spoor	734
Thompson & English	889	Greason Bros., Gateshead*	716
F. Mackey	866	Woodall & Wilson	692
Jno. T. Simpson	843		

* Accepted.

HAM COMMON (Surrey).—For providing and fixing about 2,000 ft. of Lancashire kerbing at Ham Common, Surrey, for the Ham Common Local Board. Mr. Warner, Surveyor :—

S. Atkins	11½d. per foot.
Nowell & Robson	11½d. ,,
Kavanagh	11d. ,,
W. H. Wheeler, Queen Victoria-st. (accepted)	10½d. ,,

HAMPTON WICK.—For additions to boathouse, "The Elms," Hampton Wick, Middlesex, for Mr. F. Jacob. Mr. Ernest H. Abbott, architect, 6, Warwick-court, High Holborn :—

W. Harris	£280	Hall, Beddall & Co.	£195
C. Oldridge & Sons	198	J. F. Collinson	193

HEILBRON (South Africa).—For carrying out certain works of additions and alterations to the premises of the National Bank of the Orange Free State, for the Directors. Mr. Herbert J. C. Cordeaux, architect, St. Andrews-street, Bloemfontein :—

D. Gellatly & Co. .... { £414. 10s. in brick and cement. / £450* in stone.

* Accepted ; lowest of three tenders.

HOVE (Sussex).—For providing materials and repairing three timber groynes at Hove, Brighton, for the Hove Commissioners. Mr. H. H. Scott, Town Surveyor, Town Hall, Hove :—

C. & F. Cheesman	£490 0 0	J. Harrison	£393 0 0
A. Lewis	410 17 6	J. Parsons & Sons, Hove*	315 0 0
W. Swales	395 0 0		

* Accepted.

JARROW.—For laying about 460 lineal yards of pipe sewers, with manholes, lampholes, &c., at Jarrow, for the Jarrow Sanitary Authority. Mr. J. Petree, Borough Surveyor, Jarrow :—

Simpson & Son	£212 19 6	Geo. Maughan, Albert-road, Jarrow*	£190 17 0
Thos. Gallagher	196 4 7		

*Accepted.

KINSON (near Wimborne).—For the erection of schools at Kinson Village, Wimborne, for the Kinson School Board. Messrs. Lawson & Donkin, architects, Bournemouth :—

Kite	£1,195	J. W. Lucas	£983
J. Rigler	1,040	Baker	935
W. Scott	1,028	Saunders	919
Newman	988	T. C. Rigler, Longfleet, Poole*	895

* Accepted.

LEAMINGTON.—For alterations and repairs to the Aylesford Well House, for the Leamington Corporation. Mr. W. de Normanville, Borough Engineer :—

Smith & Son	£207 0 0	Bowen	£186 17 6
Atkinson	187 0 0		

LEICESTER.—For erecting St. Paul's Methodist New Connexion Church and Schools, Melbourne-road, Leicester. Mr. A. H. Goodall, architect, Nottingham. Quantities by the architect :—

G. Bell & Son	£4,417 0	J. Hutchinson	£4,000 0
J. Riddett	4,408 10	Thos. Cuthbert	3,965 0
G. Tuffley	4,215 0	J. Cooper	3,917 0
T. Richardson & Son	4,075 0	A. B. Clarke	3,900 0
W. Needham	4,070 0	Jas. Northam	3,812 0
H. Bland	4,045 0	J. Mason & Sons, Leicester (accepted)	3,730 0
A. Plant	4,020 0		
F. Mayor & Son	4,015 5	W. Gell & Son*	3,384 0

* Withdrawn.

LLANDYSSIL (Carmarthenshire).—For additions, alterations, and repairs to Llysnewydd Mansion, near Llandyssil, Carmarthenshire, for Col. W. Ll. Lewis. Mr. D. Jenkins, architect, Llandilo :—

John Rees	£4,860 0 0	John Jones	£3,890 9 4
John Jones	4,810 14 0	Benjamin Jenkins, Brecon*	3,850 9 1
Thomas & Lewes	4,300 0 0		
D. & J. Jones	4,121 5 7		

* Accepted.

LLANDYSSIL.—For the erection of a stable at Penrallitfachnog, for Colonel Lewes. Mr. D. Jenkins, architect, Llandilo :—

Evans & Jones	£224 0 0	J. L. Davies, Pairhiwllan (accepted)	£181 15 0
D. & J. Jones	186 0 0		

LONDON.—For the erection of a new police-station at Kilburn, for the Receiver for the Metropolitan Police District. Mr. John Butler, Architect. Quantities by Mr. W. H. Thurgood :—

Higgs & Hill	£6,340	Hart Bros.	£5,979
Nightingale	6,039	Ansell	5,917
Patman & Fotheringham	5,998	Lathey Bros.	5,900
Aviss	5,997	Scrivener	5,890
J. T. Chappell	5,993	Thompson, J.	5,878
Grover & Son	5,987	Holloway	5,843

LONDON.—For rebuilding the "Mansfield Tavern," Gospel Oak, for Mr. Richard Davies. Mr. Albert E. Pridmore, architect, 2, Broad-street-buildings, E.C. Quantities by Mr. Alfred Griggs :—

L. F. Lundy (accepted) £3,439 0 0

LONDON.—For the erection of model dairy and dwelling-houses South Grove, Highgate, N., for Mr. Chas. Davies. Messrs. Bray, Young, & Co., architects, 6, Warwick-court, High Holborn. Quantities by Mr. A. Johnson :—

Hall, Beddall, & Co.	£3,188	Dixon	£2,903
Patman & Fotheringham	3,156	Southcott & Co.	2,797
Ward & Lamble	2,959	Scharien & Co. (accepted)	2,687

LONDON.—For the rebuilding of Nos. 321, 323, 325, and 327, Walworth-road, S.E., for Messrs. Claridge & Lidle. Mr. Albert L. Guy, architect, 78, High-street, Lewisham, S.E. :—

Geo. Parker	£3,944	J. Marsland	£3,770
W. Downs	3,897	S. J. Jerrard	3,689
D. & R. Kennard	3,878	Geo. King	3,260
Chas. Robson	3,836	H. L. Holloway, Deptford*	3,100
J. Tyerman	3,818		

* Accepted.

LONDON.—For additions and alterations to No. 27, Camden-road, and No. 136, Camden-street, N.W., for Messrs. Winckworth & Collinson. Mr. Thos. Newell, architect. Quantities by Messrs. Young & Brown :—

Allen & Sons	£1,209	W. Scrivener & Co.	£1,007
J. C. Tennant & Co.	1,048	Staines & Son	1,000
C. F. Kearley	1,030	A. Drew	921
Wm. Goodman	1,027	E. Toms	919

LONDON.—Accepted for decorative, sanitary, and engineering works at No. 13, Phillimore-gardens, Kensington. Mr. Delissa Joseph, architect, 17 and 18, Basinghall-street, E.C. :—

J. W. Duffield & Son, *Decorative and Building Works*	£479 9 3
Dent & Hellyer, *Sanitary Work*	415 6 0
Adams & Son, *Hot-water Work*	135 13 0
Strode & Co., *Gasfittings*	63 19 9
Pyke & Harris, *Electric Lighting*	83 2 6
Total	£1,177 4 6

LONDON.—For alterations and additions to "The Dover Castle" public-house, Plumstead, for Mr. Lomax. Mr. H. H. Church, architect, Woolwich :—

H. L. Holloway	£1,098	E. Proctor	£975
G. Hall	1,041	Multon & Wallis*	946
Balaam Brothers	1,002		

* Accepted.

LONDON.—For general internal fittings at the King's-cross Restaurant, 1 and 3, Euston-road, for Messrs. Reggori Bros. Mr. Robert Willey, architect, 66, Ludgate-hill, E.C. :—

Hayward & Son	£1,096	H. J. Williams	£998
Sage & Co.	1,072	Herbert Hanks	770
Burman & Son	1,068		

LONDON.—For pulling down and rebuilding the "Blue Posts" public-house, 32, Old Bond-street, for Mrs. Rebekah King. Mr. Robert Willey, architect, 66, Ludgate-hill, E.C. :—

Ashby Bros.	£3,311	H. J. Williams	£3,000
Burman & Sons	3,163	Martin Wells & Co., Aldershot*	2,849
B. E. Nightingale	3,098		
John Rider Hunt	3,084		

* Accepted.

LONDON.—For certain repairs at No. 4, High-road, Kilburn, for Mr. H. J. Meredith. Messrs. Godwin, Busley, & Co., surveyors, 28, Cadogan-place, S.W. :—

A. Webber	£255 0 0	Lott	£222 0 0
Anderson	224 10 0	Oldrey	155 0 0

LONDON.—For alterations and additions to the "Lord Napier" public-house, Abbey-lane, Stratford, E., for Mr. J. Still. Messrs. Fletcher & Migotti, architects :—

J. & H. Cox	£283	George Lusk	£232
Robey	279	Everard	210
Salt	264	Hallet	195

LONDON.—For alterations to shop at No. 15, High-street, Kensington, for Slater, Limited. Mr. Chas. E. Guy Hall, architect :—

J. Whitaker	£297 10 0	J. Barker & Co.*	£255 0 0
W. Nash	290 0 0		

* Accepted.

LONDON.—For alterations to shop at No. 2, Spring-street, Paddington, for Slater, Limited. Mr. C. E. G. Hall, architect :—

H. J. Appleton	£248 15 0	J. Barker & Co.*	£224 0 0

* Accepted.

LONDON.—For alterations and extension of offices for Messrs. Masson, Scott, & Bertram, engineers, Battersea :—

Carmichael (accepted) £180 0 0

LONDON.—For sundry fittings and painting, &c., to premises, Clapham Junction, for Messrs. Francis & Son, Limited :—

Carmichael (accepted) £292 0 0

[No competition.]

LONDON.—For laying new pipe sewer on the Laurel Cottage Estate, Hither Green-lane, Lewisham. Mr. Albert L. Guy, surveyor, 78, High-street, Lewisham :—

G. O. Seaton	£440	W. & J. Woodham, Lower Sydenham (accepted)	402
D. & R. Kennard	426		

LONDON.—For the erection of stables at "Riverdale" Mill, High-street, Lewisham, for Mr. J. Wallis. Mr. Albert L. Guy, architect and surveyor, 78, High-street, Lewisham :—

H. L. Holloway	£533	D. & R. Kennard	£477
R. Soper	504	S. J. Jerrard, Lewisham (accepted)	424
Chas. Robson	503		

LONDON.—For alterations and repairs at the Ravensbourne Club and Institute, Lewisham Bridge, Lewisham. Mr. Albert L. Guy, architect and surveyor, 78, High-street, Lewisham :—

T. H. Court	£220	R. Soper	£170
R. Hoare	203	Chas. Robson, Lewisham*	169
D. & R. Kennard	183		

* Accepted.

LONDON.—For alterations and sanitary works at 45, Weymouth-street, W. Messrs. Hesketh & Stokes, architects :—

John Barker & Co.	£655 0 0	S. & S. Dunn	£635 18 10

NUNEATON.—For the construction of a screening-chamber and other work at the Sewage Works, Nuneaton, for the Local Board. Mr. J. S. Pickering, Surveyor, Town Hall, Nuneaton :—

Evans	£241 10	W. Smith, Nuneaton*	£176 0
Heatherley Bros.	180 0		

* Accepted.

PENARTH.—For private street improvement works at Penarth for the Penarth Local Board. Mr. James Court, Surveyor, Local Board Offices, 1, Glebe-street, Penarth :—

James Allan	£1,675 0 11	T. Rees	£1,218 18 0
J. Pearson	1,529 12 10	R. Smith, Cardiff*	1,216 15 11
J. Mackay	1,267 14 6		

* Accepted.

[Surveyor's estimate, £1,407. 15s. 4d.

RICKMANSWORTH.—For the erection of eight cottages, New-road, Croxley-green, Rickmansworth, for Mrs. Rebekah King. Mr. Robert Willey, architect, 66, Ludgate-hill, E.C. :—

C. F. Kearley	£1,636	Holland	£1,543
F. J. Wicks	1,629	Bailey	1,530
A. & B. Hanson	1,563		

SOUTHAMPTON.—For the erection of a house, shop, carriage-sheds, &c., in Commercial-road, Fourposts, Southampton, for Mr. J. Betteridge. Messrs. Lemon & Blizard, architects, Lansdowne-house, Castle-lane, Southampton :—

Charles Moody	£971 10 0	Charles Will	£880 0 0
H. Stevens & Co.	954 0 0	Henry Cawle	874 10 0
Morgan, Isted, & Morgan	929 0 0	Filsell Bros.	809 19 6
Crook & Son	897 0 0	John Hinton	799 0 0
William Franklin	897 0 0	Fred Osman, Shirley, Southampton*	790 0 0
J. W. Roe & Co.	890 17 6	John Humber	779 0 0

* Accepted.

SYDENHAM.—For the erection of a pair of villa residences at Sydenham. Mr. Albert L. Guy, architect, 78, High-street Lewisham :—

W. H. Pritchard	£2,033	T. Knight	£1,829
S. J. Jerrard	1,993	R. Soper	1,640
G. Hall	1,992	C. Robson	1,630
H. L. Holloway	1,925	D. & R. Kennard, Lewisham*	1,500

* Accepted.

WARLINGHAM.—For the erection of stables for Mr. Worthington Church. Mr. Ernest H. Abbott, architect, 6, Warwick-court, High Holborn :—

C. Oldridge & Sons	£588 0	Hunter & Bryant	£420 0
W. Harman	456 0	A. Foster*	390 10
J. & J. Ward	427 0		

* Accepted.

WHITBY.—For the construction of about three miles and a-half of sewers at Whitby, Cheshire, for the Wirral Union Rural Sanitary Authority. Mr. Chas. H. Beloe, Engineer, 13, Harrington-street, Liverpool :—

J. Whittingham	£5,136 10 0	Holme & King	£3,864 5 3
James Bush	5,117 0 0	Walkden & Co.	3,791 0 0
Peter Balmer	5,108 8 0	H. Fotherby & Son	3,671 10 0
John Woolley	5,098 5 9	Jas. Young & Son, Sandbach, Cheshire*	3,657 0 0
Wm. Vaughan	4,700 0 0	J. Dovenor & Co.	3,650 0 0
Thomas & Morris	4,567 0 0	W. H. Bleakley & Co.	3,600 0 0
Sterling & Swann	4,532 0 0		
Lewis & Thomas	4,333 9 7		

* Accepted.

WITHINGTON.—For the sewering, draining, paving, &c., of Lansdown-street, Mauldeth-road, Withington, for the Withington Local Board. Mr. A. H. Mountain, Surveyor, Town-hall, Withington, Manchester :—

R. Lomax	£551 15 0	W. Snape & Sons	£464 19 4
G. Clarke	474 19 6	Wm. Clarke	437 8 11
M. Naylor	467 17 9	Wm. Hammett, Ashton-on-Mersey (accepted)	418 5 2
Worthington & Pownall	465 16 9		

Re *Tench-street Recreation-ground.*—Mr. James Bowles asks us to note that the amount of his tender for this work should have been 1,876*l.* 15s. 6d., and not 876*l.* 15s. 6d. The mistake was due to a clerical error on his own part.

A Correction.—In the lists of tenders for works at Tottenham-court-road and Grosvenor-buildings (see col. 3 of page 297 of our last issue), the architect's name was mis-spelt. The architect concerned for those works is Mr. R. H. Burden, *not* "Barden."

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TO CORRESPONDENTS.

C. M.—E. V. P.—J. R. (not suitable).—O. H. M. (received).—G. F. H.—"Plumber" (we cannot undertake advising correspondents on their studies : see standing notice to that effect below).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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